GAS JOURNAL

LIGHT ⁘ HEAT ⁘ POWER ⁘ BYE-PRODUCTS

[Founded in 1849 as the "Journal of Gas Lighting."]

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Telephone: Central 6055. — Telegrams: "GASKING, FLEET, LONDON."

VOL. CLXXXVII. No. 3458.] WEDNESDAY, AUGUST 28, 1929 [81ST YEAR.

Editorial Notes.

Statistics of the Industry.

THIS is about the time of year at which we have become accustomed to look for the annual statistics relating to the gas undertakings in Great Britain, as represented by the Board of Trade Return; and last week we received the published particulars regarding the manufacture and supply of gas in 1928 which are included in Part I. of this official paper. In many respects the figures are highly satisfactory; but those who are on the look-out for indications of an improvement in industrial conditions will probably be disappointed. The quantity of gas sold last year showed an increase of only 0·8 p.ct., as compared with 1927; but there is the gratifying feature to be noted that, whereas the amount sold was 0·8 p.ct. more, the make was but 0·38 p.ct. in excess of that of 1927. In other words, 2228 million c.ft. extra gas was sold, with an additional make of no more than 1132 million c.ft.

Turning back to the last preceding return, we find that in 1927 the quantity of gas sold exhibited an increase of 1·3 p.ct. over that of 1926, and on that occasion, as last year, the increased sale was secured with a smaller proportionate increase in make. While the added sale of 1·3 p.ct. represented 3633 million c.ft., the extra quantity made was only 1615½ million c.ft., or 0·5 p.ct. more than in 1926. As compared with 1926, the number of consumers in 1927 increased by 281,778, or 3·3 p.ct.; and as against 1927, the increase last year was 214,932, or 2·5 p.ct. The decrease in this rate of increase is one for which we were, perhaps, not quite so prepared as for the smaller growth of gas sales as compared with 1927. There is, of course, one big reason for this smaller percentage increase which, so far from being a sign of weakness, is an element of enormous strength in the affairs of the industry. Efficiency of service, to which so vast an amount of attention has been devoted of recent times, and which has done so much to render the position of the gas industry impregnable, has involved in most directions a lessened consumption for particular purposes; but it has made satisfied consumers, who may be expected to become bigger gas users as time passes. The most modern lamp gives, not the same, but a far better, duty with a smaller consumption of gas; and the same may be said of both cookers and fires. Persistent education in gas matters, too, creates more care in avoiding waste. As Mr. W. M. Mason said at the Irish Association meeting a few days ago, gas is the most up-to-date method for lighting, heating, and power purposes; and with each improvement in the consuming appliance, it becomes more economical than before.

Glancing down the final column of the large table included in our abstract of the return, which appears on a later page of this issue, there will be seen a tendency of recent years for the mileage of mains to increase at a more rapid rate than the sales of gas. This reveals another change in conditions of business; and it points clearly to the desirability of putting forth every endeavour to increase the gas consumption per customer. Since the re-start of building operations on a big scale after the war, numberless new residential areas have sprung up which, from the capital outlay point of view, must for some time impose a handicap upon the supplying undertaking; but, viewed broadly, this is a "casting of bread upon the waters." It will come back, and, we believe, after not too many days. Meanwhile, it has the effect, which has just been pointed out, of increasing the mileage of mains disproportionately to the increase in the total gas sales. Of the 8,901,271 consumers in 1928, no fewer than 4,968,621 were on the prepayment system, as against 3,932,650 ordinary ones. Thus last year the prepayment consumers numbered upwards of 1,000,000 more than the ordinary; while in 1920 the difference between the totals of the two classes was only a little over 600,000. Here, then, is evidence of another change in business conditions. As bearing upon the much-discussed question of the lighting load, there is heartening evidence in the fact that last year the consumption of gas for public lamps constituted a record. So far from there being any falling off, the use of gas for this purpose was greater than in the years before. Let this be an encouragement to gas managers never to let even one gas lamp go without a struggle. Evidently the lighting load can be retained, in all but exceptional circumstances.

Last year's total gas made (which includes the substantial output of the South Staffordshire Mond Gas Company) was 298,829 million c.ft., and the quantity sold reached 282,430 million c.ft.—the former figure in 1927 having been 297,697 million c.ft., and the latter 280,202 million c.ft. However, for the increased make last year of 1132 million c.ft., the quantity of coal carbonized was 142,000 tons less, albeit there was an increase of 1·5 p.ct. in the amount of coal gas made. This decrease in the quantity of coal used for a larger make of gas is a feature of the return. The water gas made decreased by 1919 million c.ft., or 4·1 p.ct.; and consequently there was a falling-off in the coke used for this purpose of 56,000 tons, and in oil of 4,624,000 gallons. As was naturally to be expected in view of developments that have been taking place, the quantity of gas bought from owners of coke ovens during 1928, and distributed by statutory gas undertakings, shows a marked increase over the preceding year; the figures being: 1928, 6560 million c.ft.; 1927, 5340 million c.ft.—increase in 1928, 1220 million c.ft. The number of gas undertakings purchasing coke oven gas continues to grow, four names having been added on the present occasion. A further indication of the trend of the times is to be found in the fact that amalgamations and absorptions have resulted in the total number of undertakings shown in the return being reduced from 782 in 1927 to 774.

Selling Gas in Country Districts.

The paper by Mr. W. H. Ainsworth before the Irish Association of Gas Managers proved a happy feature of the meeting, the animated discussion alone showing how much it was appreciated by the members. As we remarked in connection with the Presidential Address, the circumstances in which gas is sold in Ireland are very different from the conditions in this country. In Ireland not only are the majority of the undertakings very small, but they are also scattered; and these two facts render it very difficult to drive ahead with sales policy at anything approaching a rapid rate. In regard to showrooms, for example, the expense of their erection and upkeep assumes alarming proportions when viewed by the directors of small concerns. Much could be done in a small way, however, and infinitely more by closer co-operation between groups of undertakings. We have in mind a travelling showroom such as those in use by the York Gas Company, the Bradford Gas Department, and the Rochdale Gas Department. Joint ownership of such an admirable form of gas demonstration would destroy the bugbear of any one undertaking's lack of capital and assistants.

Wexford has an output of a little over 60 million c.ft. a year, so that it cannot be regarded as a very large undertaking. Mr. H. W. Saville, the Engineer, Manager, and Secretary, some time ago seriously considered the question of showrooms. After some early doubts, he took his courage in both hands, and bought showroom premises in a good position. To use his own words, the results were "amazing and embarrassing," and entirely altered his views on saturation-point. This is an indication of the value of the showroom, but there are many other ways by which the small undertaking may flourish in face of electrical competition; and some of these were mentioned by Mr. Ainsworth. Among other things, he suggested the plan of putting out an efficient boiling ring free to anyone who wants it; "it is an easy step from the ring to the cooker." There is the installation of apparatus on trial, particularly to talkative customers, though it is conceivable that such a plan might set the town a-talking, which temporarily might be a little bit too much for the gas undertaking. Then come co-operation with local traders, census schemes, and some form of maintenance. Throughout, however, there must be enthusiasm in regard to the lighting load, and here the principle of installing efficient burners on free trial—there is no need for these to be expensive—is to be highly commended. Mr. F. J. Edmonds, of Waterford, has found it a good policy in his town, and he quoted an example of a firm which, after four and a-half years' effort on the part of the Waterford Gas Company, installed a modern lamp on trial. As a result, the whole of the shop has been reconditioned, involving a large outlay for new fittings. There is no doubt whatever that persistent enterprise and the giving of efficient service, coupled with a full measure of faith in the virtues of gas, will bring a good reward.

The Will to Succeed.

As we have just said, persistent enterprise, and the giving of efficient service, coupled with a full measure of faith in the virtues of gas, will bring a good reward. It is precisely because the proceedings at the annual meeting of the Irish Association of Gas Managers are calculated to aid in all three directions that we regard the occasion as being of the first importance to gas managers in that country. Those in the Free State particularly are faced at the present moment with a condition of affairs which is calculated to give rise to very mixed feelings. The huge Shannon scheme, so long discussed, is now an accomplished fact, and has to be faced in this light. Small undertakings, already struggling against obstacles which were referred to during the proceedings, find themselves confronted by a powerful competitor with the Government at its back; and this added trouble cannot be lightly regarded. Realization, however, is seldom what anticipation promises; and such is our belief in the pre-excellence of the commodity which the gas industry has to offer, that we would bid all go forward with a stout heart. The way may not be easy; but victory will be all the sweeter for that.

The situation is one calling for neither undue pessimism nor undue optimism; rather would we say, with Mr. T. J. Reid, that the correct line lies between the two. Of the extremes, perhaps the greater danger may be said to lie with undue optimism; for that may lead to a relaxation of the effort which is undoubtedly necessary if gas is to realize everything of which it is capable. The middle course—the course which neither magnifies the rocks ahead nor minimizes them—is the one for the gas managers of Ireland to steer; and on it they will go far, if they will adopt as their companion the "will to succeed."

Co-Operation Needed.

It has been highly gratifying to note, on succeeding yearly visits, the growth of the attendances at the meetings of the Irish Association of Gas Managers. Long distances are involved for many of the members, wherever the meeting may be held; but whether at Belfast, Dublin, or Cork, big musters have become the order of the day. This is a state of affairs which must continue; for never was close co-operation between the members of the industry on that side of the Channel more desirable—nay, essential—than is the case now. The Association offers a ready means of such co-operation, and one which should be taken advantage of by all. It also offers an opportunity for discussing problems, which must be of infinite value in a region of widely scattered, and mostly small, gas-works. Though, as we have said, the attendances of recent years have been increasingly good, there is every reason why they should be still better; and this is what we hope to see them become.

Happy Lot of the Gas-Worker.

Time was—and that not so very long ago, as years count—when some sympathy was felt with the employee whose lot was cast within a gas-works. The labour was certainly arduous, and had to be performed under more or less unpleasant conditions. These, however, were the only real objections that could ever have been urged against the calling, which all along possessed compensating advantages; and inventive genius has ere this removed even these objections—at any rate, in the case of all but the smallest undertakings. From the general health point of view, there has been abundant proof of the fact that the operation of gas making does not result in insalubrious conditions either inside or outside the works in which it is carried on. In feats of prowess, the gas-worker is no whit behind his fellows; and records of remarkably long service among gas-works employees are an almost every-day experience. Indeed, quite early in the history of the industry it was recognized that gas men generally enjoyed comparative longevity when contrasted with other hard-working men.

Attention was once more drawn to this matter in the "Journal" about twelve months ago, when we published details of an inquiry which took place in Australia at the request of the Commonwealth Court of Conciliation and Arbitration, regarding the effects of exposure to inhalation of carbon monoxide gas and of working in high temperatures among employees in gas-making plants. Those who consult our issue dated Sept. 19, 1928, will find that the investigator, Dr. Frank R. Kerr, was able to draft an eminently satisfactory report, as the result of his close study of these special aspects of the question. Now we have before us an extract from the annual report of the Royal Infirmary, Edinburgh, for the year 1927-8, which contains a list of the occupations of patients who were admitted during that year. It is gratifying to note from this that gas-workers are the lowest in number among industrial workers, and that their health appears very good, even when compared with that of professional men.

To sum up, we regard the lot of the gas-worker as a happy one. He enjoys important advantages over men engaged in other industries. From the health point of

view, as we have seen, his position is eminently satisfactory; and in addition to this the work is of a regular nature, it is well paid, and the conditions of employment are good.

Public Lighting by Gas.

Anyone who may feel inclined to harbour the idea that the use of gas for public lighting is fading in popularity may be referred to the recently issued Board of Trade Return relating to Gas Undertakings in Great Britain. This return, which is fully dealt with in the present issue of the "JOURNAL," relates to all authorized undertakings, and contains a table showing, among other things, the total quantity of gas sold for public lamps in Great Britain during the years 1920 and 1928 inclusive. The amount shown for the last-named year is more than that for any of the preceding ones—the actual figure being 10,499,430,000 c.ft., which compares with 6,928,745,000 c.ft. in 1920. This should prove a conclusive answer to any doubts on the subject that one may hear or see expressed.

Hornsey Again Makes History.

The Hornsey Gas Company, who have long enjoyed an enviable reputation as suppliers of very cheap gas, intend to consolidate this reputation by a reduction in the price, as from the Michaelmas Quarter's readings of the meters, from 7½d. to 7d. per therm. Mr. J. W. Buckley, M.Inst.C.E., the Engineer and General Manager, is to be congratulated on this further indication of efficient all-round working.

Fatal Explosion at Newcastle.

In spite of the meaning popularly attached to the word "gas," there was all along grave doubt as to coal gas being responsible for the disastrous explosion that occurred in Newcastle-upon-Tyne on the morning of the 16th inst., as the result of which a girl was killed and nearly twenty people were injured. These doubts received full justification by a statement issued on the following day by Mr. R. P. Sloan, Managing Director of the Newcastle Electric Supply Company, which was to the following effect: "We have carried out such investigations as have been possible in the limited time since the explosion occurred, and we have discovered that a cable fault occurred in the locality. This resulted in the generation of bitumen gas; and this gas, if ignited by some means we have not yet discovered, might have caused the explosion." Assuming the accuracy of this theory, the disaster—which follows closely upon a somewhat similar occurrence in Dover Street, Piccadilly, causing injury to three persons—provides forceful evidence of a state of affairs which the term "gas" tends too often to obscure.

Corrosion of Mains.

The American Gas Association are collaborating with the Bureau of Standards in an extensive investigation into the effectiveness of pipe coatings as a protection against corrosion in the soil. The Committee dealing with this important question point out that at present the gas engineer, in attempting to choose a coating, finds that his principal source of information is the coating manufacturer. The engineer encounters conflicting and well-grounded opinions as to what a protective coating should be; the truth being that the characteristics and properties of a material which is available and cheap and which will best protect a pipe are not known. The investigation is being divided into two groups—coatings which are now being used by gas undertakings, and special coatings which the American Gas Association or the Bureau of Standards may include; and coatings submitted by manufactureres, who pay the Association about £50 to help to defray the expense of testing. Last month manufacturers commenced the application of their coatings to lengths of standard pipe. After the specimens are prepared, they will be buried. The time when the first set of specimens will be removed has not yet been determined, but it will probably be within a year of the date of burial. The interval between the first and second removal will be determined largely by the condition of the specimens that were first removed. The results of the test should permit a more intelligent selection of coatings and indicate the essential features of a satisfactory coating. They will also enable manufacturers to secure definite data on their products which will be acceptable to prospective purchasers. It is hoped that the results will also be of assistance in the development of laboratory tests which will identify satisfactory coatings.

Wasteful Methods.

After having caused injury which, though impossible to state in definite figures, must be considerable, to one of our staple industries, the cotton trade dispute (resulting, it will be recalled, in a stoppage of work) was submitted to arbitration. The employers claimed that a reduction in wages was necessitated by the condition of business; and the employees refused to agree to this. The arbitration tribunal has "split the difference"—halving the reduction which the employers desired to impose. This decision will probably be more or less unsatisfactory to both sides; and it has been secured by excessively uneconomical means. Directly, the loss has fallen upon the cotton industry; but such is the importance of the industry to the country, that the community has a real interest in anything which affects it. A dispute, however, in which people not involved as principals have suffered more directly—and which is therefore better calculated to impress upon them the wasteful methods of the strike—is that in the Dublin tramways service. Here, again, employers and employed came to loggerheads over a suggested wage reduction; and a stoppage of work put "non-combatants" to the maximum of inconvenience, and disorganized the business of the city to an extent which must have represented vastly more than the amount in dispute. We have no wish here to take sides. The difficulty of adjusting the employee's budget to meet a reduction of wages is obvious; but we hope for the time when the strike will be universally recognized as a "remedy" which is worse than the "disease."

Co-operative Loans for Corporations.

What is evidently a growing policy on the part of the Co-operative Societies is represented by loan investments in corporation stocks. According to a special article in the "Financial Times," the Doncaster Co-operative Society have adopted the plan of placing surplus capital with the local Corporation. They have had £20,000 with the Doncaster Corporation for some time, and have now loaned another £45,000, making £65,000. One-third of their loan investments are now with the Corporation—a policy recommended by the Committee and approved by the 24,800 members. The Hull Co-operative Society have recently had such a steady inflow of capital that the Committee have re-invested it with municipal Corporations. Another Co-operative Society who have just increased their municipal loans is that of Ripley, in Derbyshire. The members have approved the recommendation of the Committee to invest £10,000 each with the Derby, Leeds, and Sheffield Corporations, and £8000 with the Blackpool Corporation. The Society already have £20,000 with the Derby Corporation, and similar amounts with the Town Councils of Mansfield and Warrington. Over £10,000 has been loaned to the Alfreton Urban District Council, in which area the Society have branches.

The "Gas Salesman."

The "Gas Salesman" Supplement, which is included with the present issue of the "JOURNAL," contains, among other matter, an address by Mr. J. C. Walker, Secretary and Assistant Manager of the British Commercial Gas Association, and the conclusion of the "Elementary Treatise on Gas Lighting."

FORTHCOMING ENGAGEMENTS.

[*Secretaries of Gas and Kindred Organizations are asked to assist in making this diary of events as complete and useful as possible by sending the earliest intimation of all meetings.*]

Sept. 12.—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Annual Meeting at St. Andrews.

Sept. 19.—SOCIETY OF BRITISH GAS INDUSTRIES.—Council meeting in the afternoon.

Sept. 19.—WALES AND MONMOUTHSHIRE DISTRICT INSTITUTION OF GAS ENGINEERS.—General Meeting at Porthcawl.

Oct. 4.—MANCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.—General meeting.

Oct. 28-30.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual Conference at Eastbourne.

PERSONAL.

Mr. CHARLES HUNT, who died on March 30 last at the age of 86, left estate valued at £71,493.

Mr. GEORGE SNELL, the General Manager of the Wombwell Coke and Bye-Products Company, Ltd., was appointed a Director of this Company and of the Wombwell Main Company, Ltd., at a Board Meeting held on Aug. 21. He will still carry on the duties of Agent and General Manager.

Mr. HAROLD S. BOYES, Assoc.M.Inst.C.E., Technical Assistant to Mr. Frank H. Robinson, Assoc.M.Inst.C.E. (Engineer and Manager of the Harrogate Gas Company), has been appointed Assistant Engineer of the Cheltenham Gas Company.

Mr. R. WEEKES, who has had seventeen years' service with the Devonport Works of the Plymouth Corporation Gas Department, is leaving to become Lighting Superintendent and Gas Examiner at Plymouth. On Aug. 24, he was presented with a gold watch by the employees of the Devonport Works.

Mr. H. SIMPSON, Assistant Engineer to the Gosport Gas Company, has been appointed Assistant Engineer to the Guildford Gas Light and Coke Company. Mr. Simpson takes up his duties on Oct. 1.

Mr. FRANK DAWSON, son of Mr. C. G. Dawson, Engineer and General Manager of the Torquay and Paignton Gas Company, has secured the B.Sc. Degree of the London University in the Faculty of Engineering, with 1st Class Honours. He obtained also the College Diploma with distinction, and the Vernon Harcourt prize.

The Minister of Health and the Minister of Agriculture and Fisheries have appointed Mr. H. E. BROOKS to be Chairman of the Joint Advisory Committee on River Pollution in succession to Sir H. MONRO, K.C.B., who has resigned the chairmanship owing to his prospective absence abroad during the whole of the ensuing winter.

GAS STOCK AND SHARE MARKET.

[For Stock and Share List, see later page.]

A HOLIDAY atmosphere prevailed on the Stock Exchange last week, and except in a few specialities the volume of business was extremely restricted. In face of the disturbing trend of the Hague Conference, prices of gilt-edged stocks were fairly firm, but transactions were not so numerous as usual. Anxiety continued with regard to the possibility of an increase in the Bank Rate which it is thought cannot long be delayed. A particularly satisfactory feature was a steady demand for Home Railway stocks, especially Undergrounds and the North Eastern group.

In the Gas Market optimism again prevailed on the prospects of Imperial Continental capital stock, and the price rose 5 points to 380-400, an increase of 25 points since the commencement of the month. The only other change of note was a rise of 1s. to 35s.-37s. in Primitiva ordinary shares.

The following transactions were recorded during the week:

MONDAY.—Alliance and Dublin 96, 96¼, Croydon sliding-scale 109½, European 16⅛, Gas Light and Coke 18s. 6d., 18s. 7¼d., 18s. 9d., 3⅛ p.c. max. 61½, 62½, 3 p.c. deb. 57½, Imperial Continental 384, 385, 385½, 386, 387, 388, 390, 392, 393½, Liverpool 7 p.c. pref. 101⅝, Primitiva 34s., 34s. 6d., South Metropolitan 101¼, 101⅜, 101⅞, 102.

TUESDAY.—British 118½, 5 p.c. deb. 96⅝, European 16, Gas Light and Coke 18s. 4¼d., 18s. 7½d., 18s. 9d., 3½ p.c. max. 62½, 4 p.c. pref. 74⅜, Imperial Continental 387, 388, 392, Liverpool 7 p.c. pref. 101¼, Primitiva 35s. 6d., 35s. 7½d., 4 p.c. con. deb. 81½, 82, South Metropolitan 101, 101½, 101⅝, 102¼. Supplementary prices, Associated Gas and Electric "A" $63½.

WEDNESDAY.—Alliance and Dublin, 97, Bournemouth 7 p.c. 12½, 4 p.c. deb. 73, Croydon sliding-scale 109, max. div. 82, European 15½, Gas Light and Coke 18s. 4½d., 18s. 6d., 18s. 7½d., 18s. 9d., 3 p.c. deb. 57½, Imperial Continental 391⅛, 392, 393, 394, 395, 396, 397, 398, 399, Primitiva 34s., South Metropolitan 102, 102¼, South Suburban 105, Tottenham 4 p.c. deb. 75½. Supplementary prices, Associated Gas and Electric "A" $65¾, Newport (Mon.) 5 p.c. max. 80¼.

THURSDAY.—Alliance and Dublin 95½, 96, European 16, £16 1s., Gas Light and Coke 18s. 6d., 18s. 7½d., 3½ p.c. max. 62¼, 4 p.c. pref. 73⅜, 74⅜, 5 p.c. deb. 98¾, 99½, Imperial Continental 388, 390, 392, 394, 395, Ottoman 3s., South Metropolitan 101¾. Supplementary prices, Brighton and Hove 4 p.c. deb. 74, Croydon 5 p.c. deb. 92, Grays and Tilbury "A" 15⅛, Lea Bridge 5½ p.c. pref. 81.

FRIDAY.—Alliance and Dublin 95, Bournemouth 7 p.c. 12⅞, Commercial 94½, 95½, European 15½, Gas Light and Coke 18s. 4½d., 18s. 7½d., 3½ p.c. 61½, 4 p.c. pref. 74, 5 p.c. deb. 99½, Imperial Continental 385, 389, 390, 391½, 392, 393, Primitiva 35s. 5d., 36s., South Metropolitan 102½, 3 p.c. deb. 58½. Supplementary prices, Bournemouth 7 p.c. deb. 100½, British, Hull, 3½ p.c. deb. 60, British, Norwich, 3½ p.c. deb. 60, Cambridge University and Town original 150, 151, "B" 106½, 107, Scarborough con. 81½, 82, Tonbridge new "E" 178½, 179.

Money was plentiful in Lombard Street at the end of the week, and easier conditions were experienced. New overnight loans, however, commanded from 4½ p.c. down to 4 p.c., while old loans were renewed on a basis of 4¼ p.c. to 4½ p.c. Discount rates were maintained, and Treasury Bills averaged £5 9s. 7·05d. p.c., which was about ¾d. p.c. above the previous week's rate.

Foreign Exchanges were steady. The New York rate was a trifle more favourable to London, and at the finish was quoted at 4.84 3/32. French francs were quoted at 123.87½, and German marks at 20.35⅜. Dutch currency appreciated, finishing at 12.09⅞, while other rates were unchanged. Belgas closed at 34.86¾; Italian lire at 92.68; and Spanish pesetas at 32.96.

Silver declined ⅛d. to 24 1/16d. per oz., the fall being due to selling on China account, but Gold advanced by a similar amount to 84s. 11½d. per oz.

The Bank Rate is 5½ p.c., to which it was raised from 4½ p.c. on Feb. 7. The Banks' deposit rate is 3½ p.c., and the deposit rates of the Discount Houses are 3½ p.c. at call and 3¾ p.c. at notice.

POTENTIAL INVESTMENTS.

XXII.—Hastings and St. Leonards Gas Company.

The Hastings and St. Leonards Gas Company was established in the year 1832 and incorporated by Special Act of Parliament in 1854, further powers being obtained between that year and 1925. The Secretary's office is at Westminster Bank Chambers, Hastings. The statutory area of supply covers about 70 square miles, and the population is about 70,000. The length of the mains is 120 miles, and the number of consumers, calculated on the meters in use, is 17,809.

The capital of the Company as shown by the last accounts (December, 1928) is as follows:

CAPITAL STOCKS.

	£
5 p.c. converted stock	82,500
3½ " " "	258,740
5 " additional "	40,000
Premiums thereon	47,791
	£429,031
Remaining to be issued	172,971
Total amount authorized	£602,002

LOAN CAPITAL.

	£
3½ p.c. debenture stock	58,750
4 " " "	16,330
Premium capital	73
	£75,153
Remaining to be borrowed	94,708
Total amount authorized	£169,861*

* This is the amount authorized as shown by the accounts, but under the Gas Undertakings Act, 1929, the borrowing powers are automatically increased to one-half of the paid-up capital and of the premiums obtained thereon, which increases the amount that may be borrowed to £214,515.

Transfer Arrangements: Common form. Registration fee: any document, 2s. 6d. All classes of stock (in multiples of £10) allowed on one deed for one fee. Spouse may not witness signature. Voting: Between £10 and £100 of capital stock (of any class) 1 vote; 1 for every additional £100; maximum 5 votes.

Accounts and Dividends: Accounts are made up annually to Dec. 31 and submitted in March, an interim dividend being paid in September. The standard price of gas is 1s. 4½d. per therm;

present price 10½d. per therm; declared calorific value 460 B.Th.U. per c.ft. Dividends on the ordinary stocks are subject to sliding scale—viz., ⅛d. per therm above or below the standard price equals ⅛ p.ct. in half-year's dividend on converted stock and $\frac{7}{80}$ p.ct. on additional stock. In any reduction of the authorized dividends through insufficiency of funds, all classes of ordinary stock rank proportionately.

The following table illustrates the progress made by the Company during the past four years:

Year.	Price of Gas per Therm at End of Year.	Quantity Sold.	Capital Employed per Therm Sold. (a)	Gross Profit. (b)	Total Charge for Capital. (c)	Rates of Dividend P.Ct per Annum.	Amount Carried Forward and Balance Reserve Fund.
	d.	Therms.	s. d.	£	£	£ s. d.	£
1925	11½	2,445,315	2 10·6	21,235	28,695	6 15 0 (d) 5 5 0 (e) 6 4 6 (f)	36,656
1926	13	2,526,698	2 9·2	20,363	25,982	6 15 0 (d) 5 5 0 (e) 6 4 6 (f)	33,584
1927	11	2,592,629	2 8·0	30,919	26,790	6 15 0 (d) 5 5 0 (e) 6 4 6 (f)	41,323
1928	10½	2,589,458	2 8·0	21,151	27,748	7 0 0 (d) 5 10 0 (e) 6 8 0 (f)	38,472

(a) Excluding amount added on conversion.
(b) After deducting depreciation on old works and plant, and income-tax.
(c) Including amount placed to reserve fund.
(d) On 5 p.ct. converted stock.
(e) On 3½ .. .. ..
(f) On 5 p.ct. additional stock.

Last year the quantity of gas sold was practically the same as for the previous year, and was nearly 6 p.ct. more than was sold in the year 1925. During the current year, the Company reports an increase to date of about 9 p.ct. It will also be noticed that the capital employed per therm is gradually being reduced.

With gas at 10½d. per therm, there is an ample margin between the authorized dividend and the dividend actually paid, the rate of which is indicative of the Directors' safe and cautious policy.

The following table shows the highest and lowest recorded prices of the 3½ p.ct. converted stock during the past four years, the dividend paid, and the yield p.ct. per annum calculated on the middle price:

Year.	Transactions.		Dividend.	Yield P.Ct. per Annum on the Middle Price.
	Highest.	Lowest.		
			£ s. d.	£ s. d.
1925	77½	73½	5 5 0	6 19 1
1926	73½	69	5 5 0	7 7 4
1927	71	69	5 5 0	7 10 0
1928	77	70½	5 10 0	7 9 2

The present average quotation of the 3½ p.ct. stock is 82½, yielding, on the last dividend, £6 13s. 4d. p.ct., so that it is still an attractive investment. The 5 p.ct. additional stock is not quoted on the Stock Exchange, but the 5 p.ct. converted stock yields, on the present average of 98-103, £6 19s. 3d. p.ct.; but it rarely comes into the market.

ARTISTRY IN SHOWROOM DESIGN.

Gas Showrooms at Walton-on-the-Hill.

By HENRY LIBBY.

[From the "Master Builder."]

Consideration of the questions arising in the constructive and reconstructive stages of development shows that they are very much akin in their relationship. Both present for the busy professional man and the organizers of our great national industries almost the same problems, which require for their solution the prophetic vision and the gift of finding the appropriate interpretation of modern necessities. The results achieved form a relative part of one outstanding whole, though, as between individuals, success is the reward of understanding and sympathetic service.

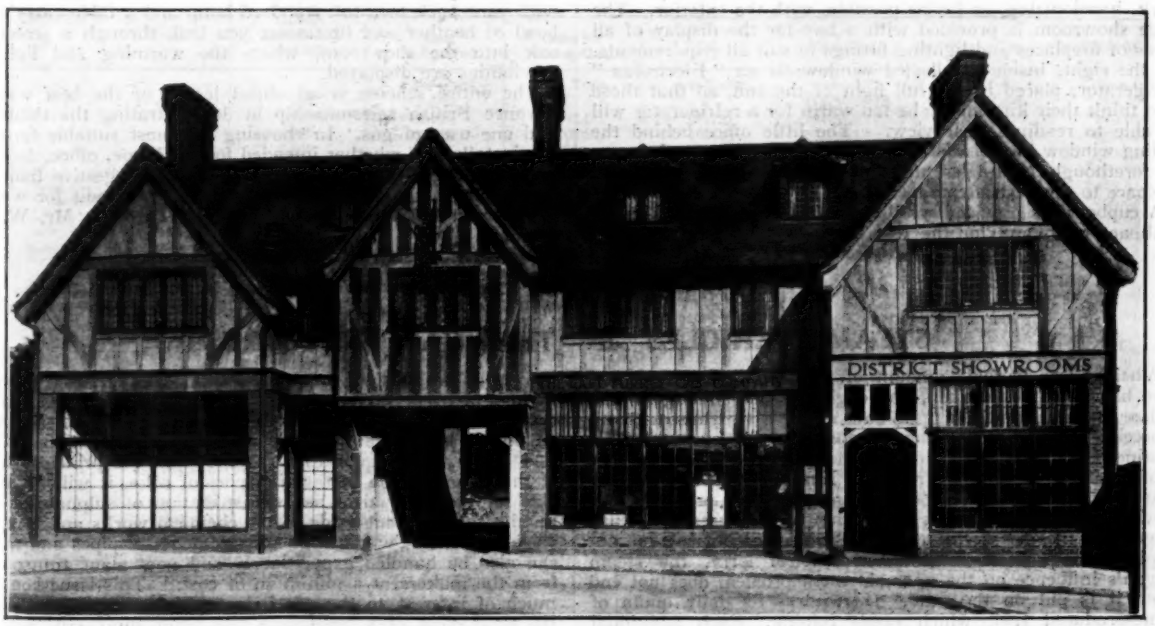
TO-DAY'S OPPORTUNITIES.

In planning large industrial works and in the solution of the complex problems of construction—keeping in view the main purpose of the building and its relation to environment—our professional men have shown that they are not hidebound by tradition, nor by a rigid adherence to any school of thought, but can rise to the opportunities of a great occasion.

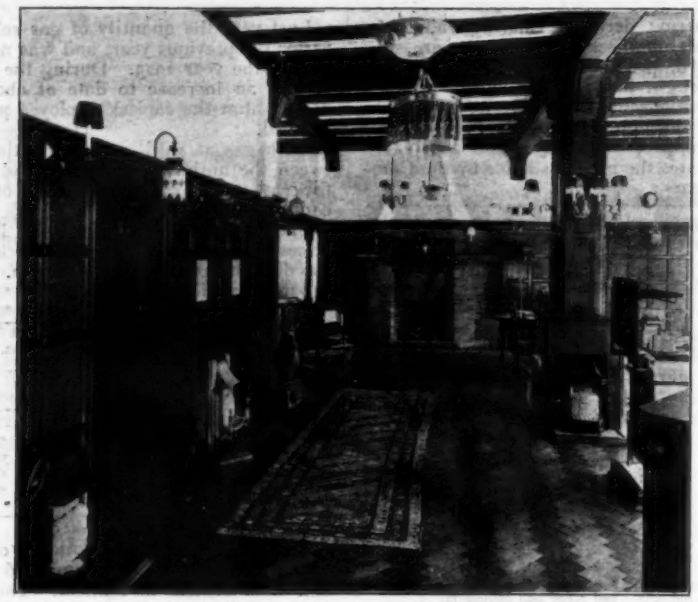
It is universally recognized to-day that the promotion of better British salesmanship is a vital and essential part of the propaganda for the development and expansion of British trade; and in this connection it will not have escaped notice that the directors of gas undertakings, the manufacturers of cooking ranges, domestic heaters, and fittings have stirred the imagination and stimulated the use of gas by means of graphic illustrations, enforced by homely wisdom. The industry has not merely been content to allow these seeds to fructify, but it has also recognized the incalculable value of providing well-appointed showrooms in which their various services can be impressively displayed.

PURPOSE AND ENVIRONMENT.

The new branch showroom and offices erected by the East



AN EXTERIOR VIEW OF THE EAST SURREY GAS COMPANY'S PREMISES.



AN INTERIOR ILLUSTRATION SHOWING EXAMPLES OF THE COMPANY'S DISPLAYS.

Surrey Gas Company (formerly the Redhill Gas Company), at Walton-on-the-Hill, is a charming example of the incorporation of the best characteristics of the Tudor period, in keeping with the amenities of the district—there is a fine old Tudor farmhouse close by—and restoring some of the old world features of highland Surrey, which had been largely lost. The building is in every way worthy of an important Company. The architect (Mr. L. Stanley Crosbie, F.R.I.B.A.) had to deal with a long, narrow site which has been skilfully utilized in providing the needed accommodation for showroom display, without in any way impairing the effectiveness of his appropriate design, which admirably fits in with purpose and environment.

It was necessary to give access to the rear of the building and at the same time to utilize all the frontage. Hence, the inviting appearance of the archway, done in half-timbered and herringbone pattern, above which is a wrought-iron sign embodying the device and the symbol of service of the East Surrey Gas Company (a gasholder surmounted by the rising sun), and reproducing, in an attractive manner, the characteristics of an old Tudor coaching inn. The architect has utilized the frontage in a way which avoids an appearance of flatness, while at the same time the space over the archway has provided accommodation for two comfortable flats, the ground floor on the left being let for other commercial uses.

Internal Design.

The showrooms on the right are lofty, spacious, and commanding, and provide for the most efficient display of every kind of gas appliance. For the most part, both showrooms and offices have been done in half-timbered and oak panelled work, harmonizing, as far as possible, with the exterior. The large showroom is provided with a bay for the display of all kinds of fireplaces and lighting fittings to suit all requirements. To the right, inside the leaded window, is an "Electrolux" refrigerator, placed in the full light of the sun, so that those who think their kitchens to be too warm for a refrigerator will be able to readjust their view. The little office behind the sliding window in the weathered oak panelling shows the careful forethought of the designer and the utilization of every inch of space to the best advantage.

A cupboard is provided within easy reach of anyone dealing with accounts, and for the rest, a single large desk, and on the wall a recording machine showing at all hours the state of the gas supply through the main.

The office at the back controls the showroom. This has been placed in such a way that those whose business calls them to the office would naturally pass the showroom, where at intervals are gas fires, each one set within and mounted on coloured tiles. These tile surrounds are quickly and easily interchangeable. Two other noticeable features should find a place in this notice. One is the ingenious insertion in the oak ceiling beams of some 66 bolts, each one of which is a gas point. The other is that pendants are shown together with wall brackets of a like design, showing how the lighting fittings of a well-designed modern house can be made to harmonize in pleasing fashion. Another attractive and useful "exhibit" is the provision of an open oak screen containing beautiful tiled plate specialities for kitchen and bathroom.

Ventilation Features.

In order to provide adequate ventilation in the showroom where various makes of gas fires, water heaters, and cookers, &c., are shown in position, a lofty elevation is arranged which blends admirably with the fine windows. The flues let into the walls and partitions of the showrooms are solidly constructed, of fine craftsmanship, which is a distinguishing feature of the building. Nothing, in fact, has been overlooked in making the installation effective, and the visitor cannot fail to be impressed with the thoroughness which has been shown in the construction and equipment of the premises. A complete flue, when it is installed (as it is to one Clarkhill heater), is fitted and finished as it would be in a consumer's house. Standing with your back to a tall standard lamp and a table carrying a bowl of heather and literature, you look through a screen of oak into the showroom, where the warming and lighting specialities are displayed.

The entire scheme is an object lesson of the best way to advance British salesmanship in demonstrating the thousand and one uses of gas. In choosing the most suitable form of gas installation, whether intended for the home, office, factory, or shop, nothing could be more helpful or suggestive than the appropriate arrangement of the interior, the credit for which, I understand, belongs to the Managing Director, Mr. W. H. Bennett.

STEAM VEHICLES IN THE GAS INDUSTRY.

Where a considerable amount of road cartage of coal and coke has to be undertaken, gas engineers and managers will realize the importance of up-to-date methods of transport, and appreciate the value of steam wagons for this purpose. The Sentinel Wagon Works, Ltd., of Shrewsbury, in their current number of the "Sentinel Transport News," deal very comprehensively with this aspect of gas undertakings practice, and provide many useful hints in regard to the uses of steam wagons at the gas-works and their important bearing on unemployment problems. Unlike the petrol lorry, the steam wagon's influence on the unemployment problem does not end when it is put on the road. It requires its daily quota of home-produced fuel, which needs mining. Each additional ton of coal or coke used as fuel for steam wagons displaces more than 80 galls. of imported petrol. As regards fuel costs, savings of over 75 p.ct. are claimed in this respect as against petrol for lorries of equal duties, though this figure may well be higher in the case of gas companies who purchase their coal in very large quantities. Apart from the principal work of the steam wagon in the transport of coke, it will be available for the removal of ashes, distribution of sulphate of ammonia, taking spent oxide to the chemical works and bringing back new oxide, while large consignments of pipes and mains can also be handled expeditiously and new plant transported from the makers at a minimum of cost. This issue contains much of interest to the gas industry, including an article on the production of a smokeless fuel from small coal without briquetting.

GAS UNDERTAKINGS RETURN FOR 1928.

Part I.—Manufacture and Supply of Gas.

The first part of the Board of Trade Return relating to all Authorized Gas Undertakings in Great Britain for the year 1928 has been issued by H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2, and Branches, at the price of 5s. net. Part I. is that which contains particulars relating to the manufacture and supply of gas.

The corresponding return for the year 1927 dealt with 782 undertakings. Nine undertakings have, since the issue of that return, been absorbed by others—namely, the Boston Spa, Knaresborough, and Tadcaster and Wetherby undertakings, absorbed by the Harrogate Gas Company; the Crossgates, Halton, and Seacroft undertaking, absorbed by the Leeds Corporation; the Emsworth undertaking, absorbed by the Portsmouth Gas Company; the Kenilworth undertaking, absorbed by the Coventry Corporation; the New Hedon undertaking, absorbed by the East Hull Gas Company; the Studley undertaking, absorbed by the Redditch Gas Company; and the Tynemouth undertaking, absorbed by the Newcastle-upon-Tyne and Gateshead Gas Company. The undertaking of the Newhaven Gas and Coke Company, Ltd., has been added to the return. The total number of undertakings shown in this return is accordingly 774. The particulars given relate to the calendar year 1928 in the case of undertakings in England and Wales, and to the year ended May 15, 1928, in the case of undertakings in Scotland.

The quantities of gas made and sold are shown both in cubic feet and therms if the undertaking was authorized to charge during the whole or any part of the year for heat units supplied. The number of therms made is based on the average calorific value supplied as officially ascertained; but in cases where no test has been made the figure shown is based either on the average calorific value supplied as stated by the undertaking or on the declared calorific value. The number of therms sold is in all cases based on the declared calorific value. The number of therms as well as the number of cubic feet sold in 1928 is shown in the case of 582 undertakings as totalling 1217 million therms, equivalent to 251,560 million c.ft. The remaining 192 undertakings sold 30,870 million c.ft., or 10·9 p.ct. of the total gas sold in 1928. Since the end of 1928, seven other undertakings, whose sales in that year amounted to 2332 million c.ft., have begun to supply on the thermal basis.

Quantity of Gas Made and Sold.

The quantity of gas made during 1928 was 1132 million c.ft. (0·38 p.ct.) in excess of the quantity made in 1927. An increase (3722 million c.ft., or 1·5 p.ct.) occurred in the quantity of coal gas made; but the quantity of water gas made decreased by 1919 million c.ft., or 4·1 p.ct. The coal carbonized was less than in 1927 by 142,000 tons, and 56,000 tons less of coke and 4,624,000 gallons less of oil were used in the manufacture of water gas. The quantity of coke and breeze made in 1928 was less than that made in 1927 by 139,000 tons; but the quantity of tar made was more by 8,690;000 gallons, and 3150 tons more of sulphate of ammonia were produced. The quantity of gas sold increased by 2228 million c.ft., or 0·8 p.ct. The number of consumers increased by 214,932, or 2·5 p.ct.

The quantity of gas bought from owners of coke ovens during 1928 and distributed by statutory gas undertakings was 6560 million c.ft., or 1220 million c.ft. more than in 1927.

Figures for England and Wales and Scotland.

There are given in the comparative table the totals for the whole of the authorized gas undertakings in Great Britain. The separate figures for England and Wales and for Scotland for the last three years are as follows:

1928.

England and Wales.—Coal carbonized, 16,028,353 tons; coke for water gas, 951,267 tons; oil used, 56,037,150 gallons. Coal gas made, 227,459,404,000 c.ft.; water gas, 44,068,731,000 c.ft.; total gas made, 275,310,025,000 c.ft. Sold to prepayment consumers, 95,231,115,000 c.ft.; to ordinary and power consumers, &c., 155,791,309,000 c.ft.; for public lamps, 9,343,002,000 c.ft.; total quantity sold, 260,365,426,000 c.ft. Coke and breeze made, 10,909,049 tons; tar, 187,078,237 gallons; sulphate of ammonia, 115,718 tons. Number of prepayment consumers, 4,628,028; ordinary consumers, 3,441,867; total number of consumers, 8,069,895. Length of gas mains, 43,390¾ miles.

Scotland.—Coal carbonized, 1,533,388 tons; coke for water gas, 28,096 tons; oil used, 340,068 gallons. Coal gas made, 22,376,594,000 c.ft.; water gas, 1,142,455,000 c.ft.; total gas made, 23,519,220,000 c.ft. Sold to prepayment consumers, 7,004,926,000 c.ft.; to ordinary and power consumers, &c., 13,902,812,000 c.ft.; for public lamps, 1,156,428,000 c.ft.; total quantity sold, 22,064,166,000 c.ft. Coke and breeze made, 891,379 tons; tar, 23,577,818 gallons; sulphate of ammonia, 13,233½ tons. Number of prepayment consumers, 340,593; ordinary consumers, 490,783; total number of consumers, 831,376. Length of gas mains, 3762 miles.

1927.

England and Wales.—Coal carbonized, 16,115,349 tons; coke for water gas, 986,691 tons; oil used, 60,585,230 gallons. Coal

COMPARATIVE TABLE.

Year.	Number of Authorized Undertakings Included in Return.	Materials Used in Manufacture of Gas.			Quantity of Gas Made.		
		Coal Carbonized.	Coke for Water Gas.	Oil.	Coal Gas.	Water Gas.	Total Made.
		1000 Tons.	1000 Tons.	1000 Galls.	1000 C.Ft.	1000 C.Ft.	Million C.Ft.
1920	798	17,566	‡	‡	214,703,118	36,932,530	*256,978
1921	797	15,776	1254	51,731	194,518,147	49,894,716	*249,020
1922	796	15,907	1058	46,145	201,963,546	43,946,129	*252,070
1923	790	16,461	907	42,752	217,756,730	38,347,643	*259,850
1924	784	17,329	976	45,461	231,886,036	39,268,220	*275,226
1925	781	17,031	1153	61,383	231,347,681	48,173,291	*283,818
1926	784	16,564	1436	97,703	226,572,490	65,309,753	*296,082
1927	782	17,704	1035	61,001	246,113,651	47,130,358	*297,697
1928	774	17,562	979	56,377	249,835,998	45,211,186	*298,829

Year.	Quantity of Gas Sold.				Quantity of Residuals Made.			Number of Consumers.			Length of Gas Mains.
	To Prepayment Consumers.	To Ordinary and Power Consumers, &c.	For Public Lamps.	Total Sold.	Coke and Breeze.	Tar.	Sulphate of Ammonia.	Prepayment.	Ordinary.	Total.	
	1000 C.Ft.	1000 C.Ft.	1000 C.Ft.	Million C.Ft.	1000 Tons.	1000 Galls.	Tons.				Miles.
1920	77,911,168	150,562,911	6,928,745	235,403	‡	‡	‡	4,030,647	3,417,685	7,448,332	38,847
1921	80,285,658	141,768,032	7,023,422	229,077	10,405	160,376	115,979	4,071,220	3,488,090	7,559,310	39,548
1922	78,224,063	146,174,788	8,203,938	232,603	10,475	169,771	113,373	4,137,009	3,535,137	7,672,146	40,231
1923	82,404,187	150,256,712	8,965,704	241,627	11,098	181,963	117,166	4,231,243	3,579,107	7,810,350	40,984
1924	88,539,752	158,748,918	9,603,252	256,892	11,657	195,257	124,737	4,340,583	3,653,203	7,993,786	41,985
1925	92,747,287	163,059,081	9,950,985	265,757	11,398	194,168	125,874	4,446,618	3,753,837	8,200,455	43,178
1926	99,301,381	168,104,527	9,162,739	276,569	11,177	187,546	116,264	4,579,691	3,824,870	8,404,561	44,471
1927	99,520,075	170,754,134	9,927,353	280,202	11,939	201,966	125,802	4,787,278	3,899,061	8,686,339	45,821
1928	102,236,041	169,694,121	10,499,430	282,430	11,800	210,656	128,952	4,968,621	3,932,650	8,901,271	47,153

* Including "Other gas," in 1920, 5,342,096,000 c.ft.; 1921, 4,606,869,000 c.ft.; 1922, 6,160,646,000 c.ft.; 1923, 3,745,163,000 c.ft.; 1924, 4,071,583,000 c ft; 1925, 4,297,336,000 c.ft.; 1926, 4,199,765,000 c.ft.; 1927, 4,453,446,000 c.ft.; and 1928, 3,782,061,000 c.ft. ‡ Information not available.

gas made, 224,023,359,000 c.ft.; water gas, 45,154,669,000 c.ft.; total gas made, 273,631,329,000 c.ft. Sold to prepayment consumers, 92,611,437,000 c.ft.; to ordinary and power consumers, &c., 156,408,337,000 c.ft.; for public lamps, 8,907,469,000 c.ft.; total quantity sold, 257,927,243,000 c.ft. Coke and breeze made, 10,919,032 tons; tar, 182,006,794 gallons; sulphate of ammonia, 111,426 tons. Number of prepayment consumers, 4,456,426; ordinary consumers, 3,410,272; total number of consumers, 7,866,698. Length of gas mains, 42,130¼ miles.

Scotland.—Coal carbonized, 1,588,244 tons; coke for water gas, 47,830 tons; oil used, 415,306 gallons. Coal gas made, 22,090,292,000 c.ft.; water gas, 1,975,689,000 c.ft.; total gas made, 24,066,126,000 c.ft. Sold to prepayment consumers, 6,908,638,000 c.ft.; to ordinary and power consumers, &c., 14,345,797,000 c.ft.; for public lamps, 1,019,884,000 c.ft.; total quantity sold, 22,274,319,000 c.ft. Coke and breeze made, 1,020,343 tons; tar, 19,959,412 gallons; sulphate of ammonia, 14,375½ tons. Number of prepayment consumers, 330,852; ordinary consumers, 488,789; total number of consumers, 819,641. Length of gas mains, 3690½ miles.

1926.

England and Wales.—Coal carbonized, 14,972,314 tons; coke for water gas, 1,401,232 tons; oil used, 97,388,134 gallons. Coal gas made, 204,491,813,000 c.ft.; water gas, 63,685,177,000 c.ft.; total gas made, 272,376,668,000 c.ft. Sold to prepayment consumers, 92,717,289,000 c.ft.; to ordinary and power consumers, &c., 154,232,476,000 c.ft.; for public lamps, 8,016,187,000 c.ft.; total quantity sold, 254,965,952,000 c.ft. Coke and breeze made, 10,178,658 tons; tar, 163,967,049 gallons; and sulphate of ammonia, 98,757¾ tons. Number of prepayment consumers, 4,260,199; ordinary consumers, 3,335,756; total number of consumers, 7,595,955. Length of gas mains, 40,860½ miles.

Scotland.—Coal carbonized, 1,591,858 tons; coke for water gas, 34,340 tons; oil used, 315,260 gallons. Coal gas made, 22,080,677,000 c.ft.; water gas, 1,624,576,000 c.ft.; total gas made, 23,705,340,000 c.ft. Sold to prepayment consumers, 6,584,092,000 c.ft.; to ordinary and power consumers, &c., 13,872,051,000 c.ft.; for public lamps, 1,146,552,000 c.ft.; total quantity sold, 21,602,695,000 c.ft. Coke and breeze made, 998,275 tons; tar, 23,578,543 gallons; sulphate of ammonia, 17,506¼ tons. Number of prepayment consumers, 319,492; ordinary consumers, 489,114; total number of consumers, 808,606. Length of gas mains, 3610 miles.

Companies and Local Authorities.

In the return for 1928 the undertakings in the hands of companies and of local authorities are divided thus:

England and Wales.—451 companies; 247 local authorities.
Scotland.—4 companies; 72 local authorities.

Declarations of Calorific Value.

The first column of figures is devoted to the declared and the average (when the latter has been officially ascertained) calorific values of gas supplied. When noticing the returns for the seven preceding years, lists were given of the following numbers of undertakings which had made declarations of calorific value; 1921, 184 undertakings; 1922, 162 undertakings; 1923, 134 undertakings; 1924, 49 undertakings; 1925, 42 undertakings; 1926, 13 undertakings; and 1927, 10 undertakings. To these may now be added the undertakings mentioned below, with their declarations in B.Th.U. made in 1928:

Birmingham, 475	Lymm, 500	Southend on-Sea, 450
Conway Corporation, 400	Mablethorpe, 500	
	Matlocks, 500	Blantyre, 400
Earl Shilton, 450	Scarborough, 450	East Kilbride, 400

Alterations in Calorific Value.

As in the year immediately preceding, there were in 1928 a number of instances of undertakings making alterations in the calorific values that had previously been declared by them.

Bromsgrove Gaslight and Coke Company—from 450 to 470 B.Th.U.
Burnham (Somerset) Gas Company—from 480 to 450 B.Th.U.
Conway Corporation—from 450 to 400 B.Th.U.
Hampton Court Gas Company—from 450 to 470 B.Th.U.
Harrogate Gas Company—
Knaresborough Area—from 500 to 460 B.Th.U.
Tadcaster Area—{ from 525 to 500 B.Th.U. / from 500 to 460 B.Th.U.
King's Lynn Gas Company—from 475 to 500 B.Th.U.
Newcastle upon-Tyne and Gateshead Gas Company—
Tynemouth Area—from 470 to 500 B.Th.U.
Padiham Urban District Council—from 475 to 500 B.Th.U.
Redditch Gas Company—from 475 to 500 B.Th.U.
Walton-on-Thames and Weybridge Gas Company—from 450 to 460 B.Th.U.
Welwyn and Hatfield Gas Company—from 480 to 500 B.Th.U.

Water Gas Supplied.

As is customary, there is set out in the second column of the return the proportion of water gas supplied by various undertakings; the maximum and average figures being given. The following cases (with their percentages) are noted in which the maximum proportion of water gas reached 25 p.ct.

England and Wales.

Abingdon, max., 45; av., 18.
Accrington, max., 25; av., 21·5
Aldershot, max., 49·1; av., 16·6.
Ascot, max., 28; av., 25.
Ashford, max., 41·4; av., 13·6.
Aylesbury, max., 40; av., 34·7.
Barnet, max., 45·8; av., 32·1.
Barry, max., 60; av., 30.
Bath, max., 56·7; av., 29·2.
Batley, max., 28; av., 22.
Berkhampstead, max., 43; av., 13.
Bideford, max., 48·7; av., 14·2.
Biggleswade, max., 25; av., 15.
Birkenhead, max., 35·3; av., 18·3.
Bishop Auckland, max., 31·4; av., 2·5.
Bishop's Stortford, max., 57·9; av., 44.
Blackpool, max., 27·4; av., 6·9.
Blaenavon, max., 40; av., 34·7.
Bognor, max., 25; av., 19·7.
Bournemouth, max., 47; av., 36·3.
Bridlington, max., 54·8; av., 39·5.
Brighton, max., 46; av., 34.
Bristol, max., 40·6; av., 31·5.
Burnham, max., 57·7; av., 28·2.
Burnley, max., 33·7; av., 1·4.
Burton-upon-Trent, max., 25·8; av., 15·5.
Caernarvon, max., 30; av., 25.
Cambridge, max., 34; av., 33.
Cardiff, max., 43·3; av., 27·6.
Carmarthen, max., 40; av., 25.
Chesham, max., 37; av., 22.
Chester, max., 30; av., 6·7.
Chichester, max., 51·7; av., 33·6.
Cirencester, max., 36; av., 25.
Clacton, max., 56·4; av., 47·3.
Cleator Moor, max., 34·4; av., 23·9.
Colchester, max., 40; av., 22.
Colne, max., 55; av., 45.
Colwyn Bay, max., 45; av., 33.
Conway, max., 25; av., 25.
Coventry, max., 35·5; av., 13·4.
Cranleigh, max., 27·7; av., 14·3.
Crowborough, max., 31; av., 20·4.
Croydon, max., 38·9; av., 27·6.
Derby, max., 33·8; av., 19·7.
Devizes, max., 54; av., 6·3
Doncaster, max., 52·3; av., 41·8.
Dorchester, max., 44; av., 28.
Dorking, max., 40 8; av., 23·2.
Dudley, max., 47·4; av., 7·4.
Eastbourne, max., 38; av., 29.
East Grinstead, max., 35; av., 26·6.
East Hull, max., 42; av., 34·1.
East Surrey, max., 55·1; av., 45·1.
Exeter, max., 32·5; av., 12·1.
Falmouth, max., 33; av., 14.
Felixstowe, max., 44·6; av., 22·3.
Fleetwood, max., 25; av., 18·2.
Gas Light and Coke Company, max., 32·4; av., 27·7.
Gloucester, max., 46·5; av., 33·7.
Gosport, max., 59·6; av., 43·7.
Grays and Tilbury, max., 51; av., 26·7.
Great Yarmouth, max., 35; av., 16.
Guildford, max., 44; av., 28.
Halesowen, max., 35; av., 7.
Halstead, max., 28·7; av., 28·7.
Hampton Court, max., 46; av., 33.
Harpenden, max., 33; av., 17.
Hartlepool, max., 47·4; av., 25·9.
Hastings and St. Leonards, max., 50·4; av., 36.
Haverhill, max., 30; av., 25.
Hayward's Heath, max., 37·6; av., 8·9.
Hebden Bridge and Mytholmroyd, max., 30·5; av., 9·2.
Hemel Hempsted, max., 39·7; av., 28·6.
Hereford, max., 71·6; av., 20.
Hertford, max., 40; av., 18.
Hoddesdon, max., 50; av., 40.
Horley, max., 33; av, 27.
Hornsey, max., 56; av., 41.
Hull (British Gas Light), max., 37·6; av., 23·2.
Ipswich, max., 47·4; av., 24·6.
Irthlingborough, max., 54·8; av., 44·6.
Kendal, max., 45; av., 20.
Kettering, max., 46·2; av., 41·2.
Kidderminster, max., 30; av., 20.
King's Lynn, max., 52·6; av., 34.
Kingston-upon-Thames, max., 41·3; av., 32·2.
Lancaster, max., 26·5; av., 0·8.
Lea Bridge, max., 48·1; av., 39·8.
Leamington, max., 25; av., 2·5.
Leatherhead, max., 40; av., 8·7.
Leeds, max., 25; av., 7·8.
Leigh, max., 40·2; av., 1·9.
Lincoln, max., 30; av., 23·2.
Liverpool, max., 50·2; av., 40·7.
Llandudno, max., 35; av., 30.
Llanelly, max., 62·25; av., 48·8.
Llynvi, max., 35; av., 25.
Long Eaton, max., 25; av., 16.
Loughborough, max., 30; av., 24·3.
Lowestoft, max., 40; av., 29·8.
Lymington, max., 25; av., 15.
Lymm, max., 30; av., 18.
Macclesfield, max., 50.
Maidstone, max., 40; av., 30·5.
Malton, max., 47·7; av., 14.
Mansfield, max., 49; av., 32.
Marlborough, max., 25; av., 8.
Merthyr Tydfil, max., 33·4; av., 17·1.
Mid-Kent, max., 30·5; av., 26·3.
Morecambe, max., 38·3; av., 8·1.
Newark, max., 35; av., 15.
Newbury, max., 25; av., 3·1.
Newport (Mon.), max., 35·9; av., 26·9.
Newport Pagnell, max., 44·1; av., 24 2.
Normanton, max., 31; av., 24.
North Middlesex, max., 64·9; av., 42·6.
Oldbury, max., 37·1; av., 10·6.
Peterborough, max., 34·3; av., 20·8.
Pinner, max., 33·3; av., 13.
Plymouth Corporation, max., 63·8; av., 48·2.
Plymouth and Stonehouse Gas Company, max., 52·8; av., 31.
Pontefract, max., 37; av., 32.
Porthcawl, max., 40; av., 33.
Portsmouth, max., 49·3; av., 37·7.
Preston, max., 45; av., 30.
Ramsgate, max., 36·2; av., 15·1.
Raunds, max., 35; av., 25.
Reading, max., 43·4; av., 27·8.
Rhyl, max., 48; av., 20.
Rochester, Chatham, &c., max., 43; av., 29·1.
Romford, max., 52·7; av., 32·5.
Rugby, max., 61·6; av., 39·1.
Rushden and Higham Ferrers, max., 60·4; av., 39·9.
Saffron Walden, max., 28·9; av., 19·1.
St. Albans, max., 54; av., 25.
Scarborough, max., 67·2; av., 54·8.
Seaford, max., 30; av., 4.
Seaham, max., 30·8; av., 14·8.
Selby, max., 33; av., 12·5.
Sevenoaks, max., 50; av., 30.
Shanklin, max., 25; av., 13·6.
Sheppy, max., 35; av., 31.
Sheringham, max., 25; av., 20.
Shrewsbury, max., 27; av., 8·5.
Sidmouth, max., 36; av., 9.
Sittingbourne, max., 60; av., 41.
Southampton, max., 55·8; av., 44·1.
Southend, max., 52; av., 50.
Southgate, max., 67·6; av., 49·8.
South Suburban, max., 31·1; av., 22·5.
Spalding, max., 43; av., 24.
Spennymoor and Tudhoe, max., 25; av., 10.
Stafford, max., 25; av., 25.
Stockport, max., 29; av., 6.
Stockton-on-Tees, max., 33·6; av., 4·6.
Stoke-on-Trent, max., 36·1; av., 12·3.
Sutton, max., 41·2; av., 12·1.
Swansea, max., 67; av., 39·2.
Swindon, max., 44·6; av., 22·9.
Swinton and Mexborough, max., 40.
Taunton, max., 50; av., 37.
Tawe Valley, max., 55·9; av., 45·9.
Teignmouth, max., 30; av., 20.
Tendring Hundred Company (Walton-on-Naze), max., 32·4; av., 23·5.
Tonbridge, max., 52; av., 49.
Torquay, max., 33·3; av., 16·2.
Tottenham, max., 47; av., 26.
Trowbridge (British Gas Light), max., 29·9; av., 11·6.
Tunbridge Wells, max., 73·5; av., 37.
Uxbridge, Maidenhead, and Wycombe, max., 65; av., 30·3.
Wakefield, max., 26·7; av., 10·7.
Waltham and Cheshunt, max., 39; av., 30.
Ware, max., 58·8; av., 42·3.
Watford, max., 42·3; av., 28·7.
Wellingborough, max., 65; av., 54.
Wellington (Somerset), max., 35; av., 20.
Wells, max., 27; av., 13.
Westgate and Birchington, max., 42; av., 35.
Weston-super-Mare, max., 49·5; av., 20·8.
Weymouth, max., 70; av., 60.
Willenhall, max., 34·6; av., 5.
Winchester, max., 50; av., 38.
Woking, max., 31·2; av., 18·6.
Wokingham, max., 42; av., 33.
Wolverhampton, max., 47·3; av., 31·4.
Yeadon, max., 32; av., 24.
York, max., 37·2; av., 10·8.
Yorktown (Camberley), max., 30; av., 9.

SCOTLAND.

Airdrie, max., 50; av., 40.
Ardrossan, max., 33·3; av., 25.
Bridge of Allan, max., 27·5; av., 24.
Kilmarnock, max., 40; av., 35·8.
Kirkintilloch, max., 55; av., 50.
Largs, max., 50; av., 50.
Newport, max., 38·7; av., 34·8.
Stirling, max., 45; av., 40.
Tayport, max., 40; av., 25.

GAS IN BULK.

The usual tables are included which show the gas sold in bulk to authorized gas undertakings by other undertakings, and that similarly bought by undertakings. The figures are included only once in the return—*i.e.*, as made by the selling undertaking, and as sold to consumers by the purchasing undertaking. The gas so sold amounted to 843,341,000 c.ft.; while the purchases totalled 832,598,000 c.ft. The biggest figures in these tables are:

Gas Sold to Authorized Undertakings.

Selling Undertaking.	C.Ft.
Bedwellty U.D.C.	15,459,000
Birmingham Corporation	24,412,000
Hull (British Gas Light Company, Ltd.)	67,339,000
Oldbury U.D.C.	10,767,000
Otley Gas Company	23,047,000
Rhymney and Aber Gas Company	58,356,000
South Metropolitan Gas Company	59,624,000
Sutton-in-Ashfield U.D.C.	13,435,000
Watford Gas and Coke Company	146,281,000
Windsor Royal Gaslight Company	25,964,000
Bothwell and Uddingston Undertaking (Lanark County Council)	252,276,000
Cambuslang Undertaking (Lanark County Council)	65,036,000

Gas Bought by Authorized Undertakings.

Purchasing Undertaking.	C.Ft.
Bedwellty U.D.C.	58,356,000
Burley-in-Wharfedale U.D.C.	23,047,000
Hull Corporation	67,339,000
Huthwaite U.D.C.	13,435,000
Mynyddislwyn U.D.C.	22,876,000
Pinner Gas Company, Ltd.	37,006,000
Rickmansworth U.D.C.	86,991,000
Rowley Regis and Blackheath Gas Company	20,859,000
Solihull Gas Company	24,412,000
South Suburban Gas Company	57,690,000
Uxbridge, Maidenhead, Wycombe, and District Gas Company	58,414,000
Bellshill and Mossend Undertaking (Lanark County Council)	75,623,000
Blantyre Undertaking (Lanark County Council)	53,539,000
Cleland and Omoa Undertaking (Lanark County Council)	12,442,000
East Kilbride Undertaking (Lanark County Council)	11,497,000
Holytown, New Stevenston, and Carfin Undertaking (Lanark County Council)	42,384,000
Larkhall Undertaking (Lanark County Council)	91,150,000
Newarthill Undertaking (Lanark County Council)	11,939,000
Stonehouse Undertaking (Lanark County Council)	18,738,000

OTHER GAS.

Of the 3,782,061,000 c.ft. of "other gas" produced by the various undertakings in 1928, the South Staffordshire Mond Gas Company were responsible for 3,259,947,000 c.ft. The output of this Company in 1927 was 3,123,359,000 c.ft. The remainder of the "other gas" was largely made up of Tully gas and mixed coal and water gas. The total of gas made shown in the return, of course, includes this "other gas."

COKE OVEN GAS SUPPLIES.

The following quantities of gas were bought from owners of coke ovens by authorized gas undertakings, and appear in the return as sold to consumers by those undertakings:

Purchasing Undertaking.	Quantity of Gas Involved.
	C.Ft.
Accrington District Gas and Water Board	121,399,000
Ackworth, Featherstone, Purston, and Sharlston Gas Company	41,931,000
Castleford and Whitwood Gaslight and Coke Company	152,348,000
Chesterfield Corporation	121,894,000
Dinnington and District Gas Company, Ltd.	42,636,000
Eckington and Mosborough Gas Company, Ltd.	22,008,000
Houghton-le-Spring District Gas Company	52,143,000
Kidsgrove Gaslight Company	49,795,000
Killamarsh Gas Light and Coke Company, Ltd.	13,492,000
Leeds Corporation	323,007,000
Little Hulton U.D.C.	20,507,000
Middlesbrough Corporation	1,091,220,000
Ossett Corporation	142,680,000
Pontypridd U.D.C.	155,292,000
Port Talbot Corporation	94,692,000
Rawmarsh U.D.C.	88,832,000
Redcar Corporation	141,795,000
Rhymney and Aber Gas Company	295,045,000
Rotherham Corporation	436,711,000
Sheffield Gas Company	2,228,336,000
Staveley Gas Light and Coke Company	11,741,000
Stocksbridge Gas Company	44,340,000
Swinton and Mexborough Gas Board	76,549,000
Tudhoe and Sunderland Bridge Gas Company	3,068,000
Wath, Bolton, and Thurnscoe Gas Board	111,457,000
Wombwell U.D.C.	83,985,000
Worsbrough Dale and Worsbrough Gas Light and Coke Company, Ltd.	31,545,000
Glasgow Corporation	561,941,000
Total	6,560,389,000

The total compares with a figure of 5,340,223,000 c.ft. of coke oven gas purchased by gas undertakings in 1927; 2,321,850,000 c.ft. in 1926 (which year was, of course, affected by the coal strike); 4,797,752,000 c.ft. in 1925; 4,470,914,000 c.ft. in 1924; 4,268,055,000 c.ft. in 1923; 3,635,678,000 c.ft. in 1922; and 1,325,027,000 c.ft. in 1921. There are on the present occasion four names added to the list of purchasing undertakings—those of the Accrington District Gas and Water Board, the Ackworth, &c., Gas Company, the Killamarsh Gas Company, and the Tudhoe, &c., Gas Company.

PREVENTING CORROSION OF MAINS AND SERVICES.

"Denso" Plastic Protective Dressing.

Gas engineers of this country who visited the German Gas and Water Exhibition in Berlin must have been interested in the exhibit of Schade's protective dressing for mains and services, which is used extensively by many German gas undertakings, and which is being employed for the long-distance mains in connection with the coke-oven gas scheme. The latest application—the protection of the 16-in. main from Essen to Hanover—has, by the way, been the subject of an interesting cinematograph film. Manufactured by Chemieprodukte G.m.b.H., of Berlin, Schade's dressing is now being marketed in Great Britain by Messrs. Paul Winn & Co., Ltd., of Oxford House, 15, John Street, Crutched Friars, E.C. 3, under the name "Denso."

PROPERTIES OF "DENSO."

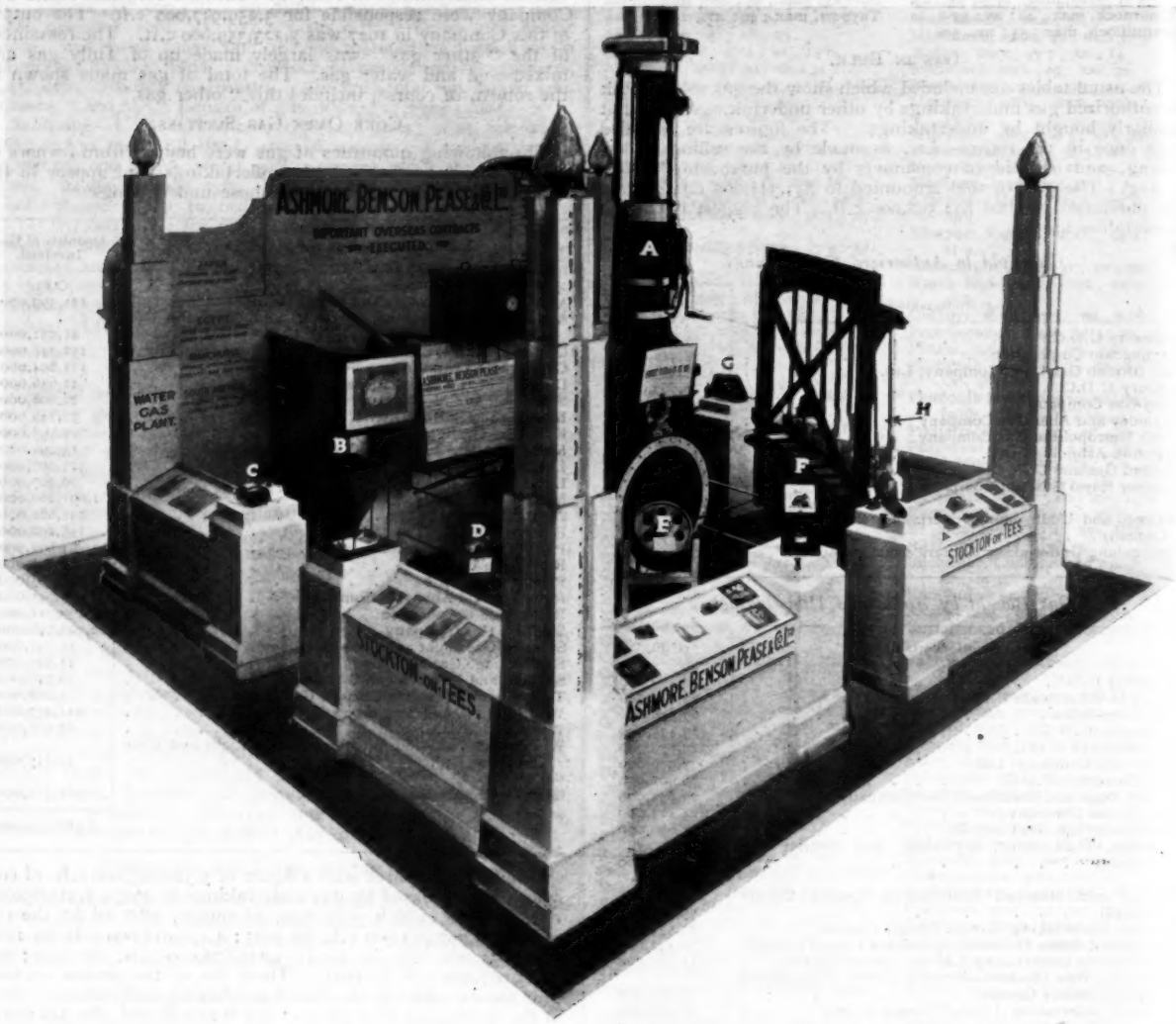
It is claimed for "Denso," which is sold in the form of rolls of specially woven cloth covered on both sides with the dressing, of a width of 5 or 10 cm., that it is moisture and gas proof; that it affords effective protection against chemicals of all kinds, such as acids, lyes, and electrolytes, existing in the ground; that it provides complete insulation against electro-chemical action caused by stray currents; that its plasticity remains constant in all circumstances met with underground; and that its application to all sizes and types of pipe is an exceedingly simple matter. The last-named advantage is of great importance in eliminating the inconvenience of tar boilers and in considerably reducing labour costs. The dressing is simply wrapped round the pipe to be protected, no heating or other preparation—apart from ensuring that the pipe is dry and free from rust—being necessary. One of the incidental uses of "Denso" is for the temporary sealing of broken mains and services, in which direction it is remarkably effective.

TESTS IN GERMANY.

"Denso" dressing has been examined by the Karlsruhe Gas Institute, who have issued a report on the results of their tests. With regard to its resistance against chemical action, it may be mentioned that it was subjected to the influence of 20 p.ct. hydrochloric acid, sulphuric acid, and ammonia for fifty hours at 20° C., without the slightest effect being noticeable. Boiling in a normal solution of potassium permanganate also produced no alteration in the plasticity of "Denso," nor did the bubbling of oxygen through the molten mass at 60° C. result in any thickening or hardening. The report states that it is a good insulator against electricity. Tests were also carried out on its adhesive properties, which were found to be excellent.

Writing in "Das Gas- und Wasserfach" for March 2, 1929, Dr. W. Bertelsmann described the results of experiments on "Denso," undertaken by the Berlin Gas-Works, on two pipes, one of which lay in boggy ground and the other of which was subjected to the influence of stray earth currents. After being in the ground for a year and a half, they were taken up and examined, and it was found that the dressing had afforded complete protection. The condition of the pipes was unchanged.

NORTH-EAST COAST EXHIBITION.



A feature of first importance on the stand of Messrs. Ashmore, Benson, Pease, & Co., Ltd., at the North-East Coast Exhibition is the full-size section of the Klönne patent dry gasholder. To those interested in gasholders, this affords an excellent opportunity for an inspection of the construction, showing how the gas tightness between the piston side sheets is effected by lubricated packing rings. There are many special advantages and features of this Klönne holder; and mention may be made of the fact that the first of this type for this country is at present being built by the firm for the York Gas Company.

Another special exhibit is a 33-in. hydraulically-operated gas valve, which is in operation, and of which there are 63 in use on a water gas plant, probably the largest in the world, which the firm have installed at a chemical factory.

An autoclave lead-lined by the "K.K.K.-P.G.C." homogeneous process suitable for working pressure up to 4000 lbs. per sq. in., with steam jacket pressures up to 100 lbs. per sq. in., and a homogeneously lead-lined heat interchanger in part section by the same process are exhibited. There are also a few other specimens of homogeneous linings.

Among the other exhibits may be cited models of Forter gas reversing valves, the Parkfield patent fastener for purifier covers, &c.

There is a model of a Beaton patent refractory tuyere and a model of Freyn blast furnace bunker gates.

There are also a large number of interesting photographs of blast furnace plant, chemical plant, town gas plant, producer gas plant, and other engineering constructions which the firm have carried out.

Safety in Mines Research Board.—The Safety in Mines Research Board have published a subject-index, with title page and table of contents, of Vol. III. of their publications, comprising their fifth annual report, and their Papers Nos. 30 to 40 published in 1927. The index (price 2d.) can be obtained from H.M. Stationery Office, Adastral House, Kingsway, W.C. 2. Vol. III., complete with index, can be obtained from the same source, price 7s. 6d.

Fusion Point of Coal.—A great amount of research and money has been expended during recent years upon the problem of low-temperature carbonization of coal. In many of the processes, especially the two-stage processes, it is advantageous to know the fusion temperature of the coal to be used. Coals vary considerably in this regard. An apparatus similar to one devised by Agde, in Germany, has been constructed and used at the Pittsburgh Experiment Station of the U.S. Bureau of Mines for this determination. With this apparatus two cylinders of coal contained in a copper block are heated until a weighted needle resting upon one cylinder sinks as the coal fuses; the fusion temperature is indicated by a thermocouple resting in the second cylinder. This apparatus appears to be suitable for use with any fusible coal. It is to be checked against other methods.

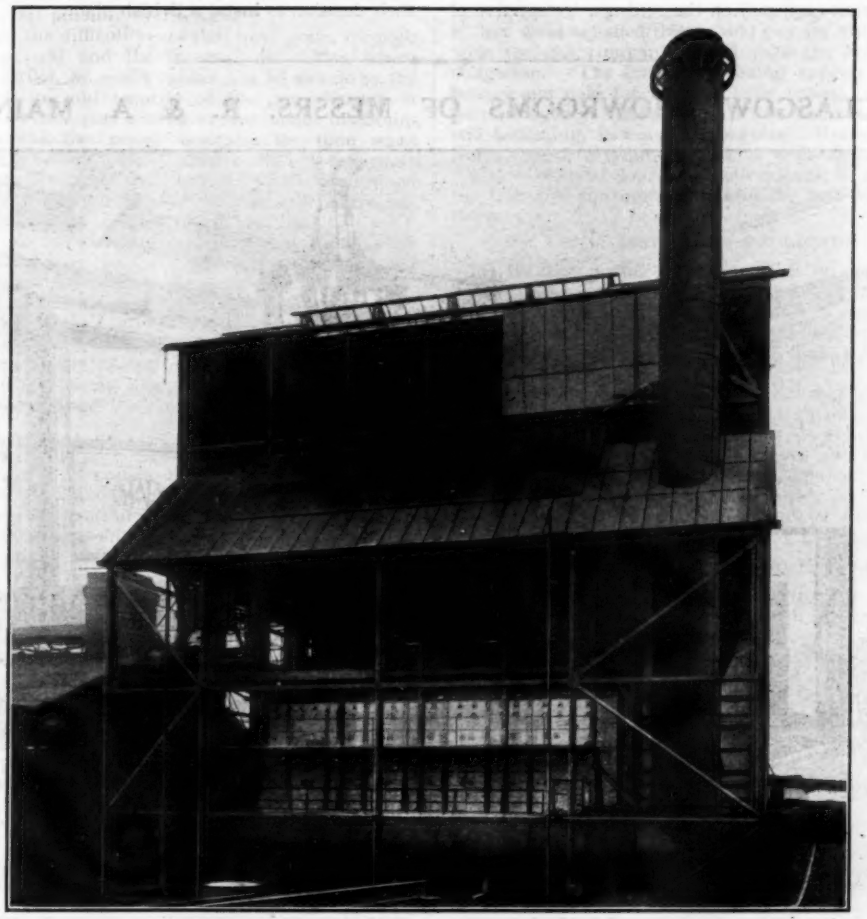
Gas Fuel for Motor-Cars.—Trials are being made in the Rhineland with a motor-lorry fitted with an "Imbert" gas generator—a French invention—which generates gas for the motor from ordinary brown coal (lignite) briquettes. The driver places a number of briquettes into the apparatus, and the gas generated, after being purified and mixed with air, passes direct to the motor. It is claimed that this gas fuel is as effective as other fuels and is 90 p.ct. cheaper. At the instance of the brown coal mine-owners in the Rhineland, the exploiters of the lignite gas method, the Deutsche Gasgeneratoren Company, at Bonn, have carried out a series of tests with the lorry. On each consecutive day the lorry has been run continuously for thirteen hours. On the results of these tests will depend whether the new form of motor fuel will be applied to other types of vehicle. Apparently there is no necessity to refit vehicles with a specially designed motor for the gas. The test lorry is fitted with the usual type of motor.

WOODALL-DUCKHAM CONTINUOUS VERTICAL RETORTS IN CHILE.

The Valparaiso Installation.

It is always interesting to find British inventions accepted in lands far removed from this country. It is still more interesting when these inventions prove themselves to be successful in actual use. Success has certainly been the lot of the Woodall-Duckham system of continuous vertical retorts, of which type of plant there are at present 230 installations spread over the five Continents of the world, with a total carbonizing capacity of nearly 10 million tons of coal per annum.

A recent example of this success is illustrated in the new installation of Woodall-Duckham continuous vertical retorts built for the Valparaiso Gas Company, which, we are authoritatively informed, has under test exceeded its guarantees by 10 p.ct.



The Valparaiso installation embodies all the well-known features of the Woodall-Duckham system, and is built in accordance with their latest practice and design. The plant consists of one bench of sixteen 62 in. retorts. The retorts are about 25 ft. high, and are of rectangular tapered shape, the retort faces and combustion chambers being constructed of best quality silica material for the full depth of the combustion chambers. Each retort is a separately controlled heating and scurfing unit, and has a capacity of from 5 to 7 tons of coal per day.

COAL AND COKE HANDLING.

The coal and coke handling gear has been scientifically designed to require a minimum of labour and attention. "Run of mine" coal is fed into a small hopper in the floor of the coal store, whence it passes on to a jigging feeder. This is fitted with a screen which separates out the smaller sizes, but passes on the larger lumps to a single roll coal breaker, with a capacity of 20 to 25 tons per hour. This is designed to reduce the size of coal to about 3½ in. cube, with a minimum production of dust and fines. The smaller screenings and the crushed lumps are elevated by a 25 ton per hour capacity gravity lip-bucket conveyor, which encircles the end bay of the retort house. The coal is discharged on to a push plate conveyor, which is arranged above and along the overhead storage hoppers. The latter have a capacity equivalent to 48 hours' coal consumption. The coal is distributed into various bays of the hoppers, and thence through valves of special design into the auxiliary supply hoppers which are attached to the top mouthpieces of the retorts. The coal then falls by gravity into the retorts at a speed governed by the rate at which the coke extractor is operated. Cast-iron hoppers, having a capacity equivalent to 2 hours' make of coke, are provided beneath the extractors. Here the coke is cooled and its residual heat utilized for the formation of water gas, by the admission of steam through jets fitted into the curved bottom plate of the extractor box. The coke is discharged through a patent door (which when closed is water sealed) into telpher skips or into a side-tipping skip. This latter is used to replenish the overhead coke storage hopper, which is adjacent to and forms an extension of the coal storage hoppers.

The side-tipping skip is taken to one end of the retort house, and is discharged through a small receiving hopper on to the gravity bucket conveyor, whence the coke is conveyed to the appropriate hopper in a similar manner to the coal. It is taken from this hopper either to the producers or to any retort by means of a chute and a mono-rail charging skip. The telpher skips transport surplus coke where required.

HEATING ARRANGEMENTS.

A battery of three independent step-grate producers, built on one side of the bench at retort house floor level, supplies the producer gas. The grate area provided is ample for the production of the requisite volume of producer gas necessary for the efficient heating of the setting. A common producer gas

flue, together with the appropriate dampers, allows of any one retort or producer being shut down independently. Each retort is separately heated by the combustion of the producer gas and air in a series of vertical combustion chambers on either side of the retorts. Additional secondary air inlets, controlled by suitable dampers, are provided some distance below the main nostrils, thus forming an additional means of regulating the combustion chamber temperatures.

Waste Gases.

A common waste-gas collecting main runs along the side of the bench, each retort having a separately controlled off-take into this main. It is lined with a 1½ in. thickness of insulating material. The setting is of the non-recuperative type, and the waste gases pass on to a horizontal fire-tube waste-heat boiler, through which they are drawn by an induced draught fan. All the available heat having been extracted, the waste gases pass on to a 100 ft. fire-brick lined steel chimney, and so to atmosphere. Automatic air regulators are provided on the waste gas main to ensure an even pull on the settings, irrespective of atmospheric changes, at such times as the waste-heat boiler is shut down and the setting is working on natural draught.

Gas Make.

The retort off-takes are of the arched type, and are provided with patent valves so that each retort may be entirely shut off from the collecting main for scurfing purposes. Two such mains are provided, each serving eight retorts. They are connected to two 16 in. foul mains which converge into a common 21 in. steel main. From here the remaining volatile products travel, via a Parkinson & Cowan retort house governor, to a Holmes cyclone tar extractor.

Provision is made for the circulation of ammoniacal liquor in the foul main. Two pumps are supplied (one acting as a standby), either of which is capable of pumping 800 galls. of liquor per hour.

Thus in every respect, the installation has been made to conform with the modern requirements of the gas engineer; and it is suggested that the Valparaiso Gas Company will not regret their decision to instal a British plant.

NEW GLASGOW SHOWROOMS OF MESSRS. R. & A. MAIN, LTD.

INTERIOR VIEW OF MESSRS. MAIN'S NEW OFFICES IN GLASGOW.

To provide adequate accommodation for their permanent exhibit in Glasgow of the firm's ever-increasing variety of products, Messrs. R. & A. Main, Ltd., of London and Falkirk, have lately removed their showrooms to a more extensive suite at the same address, 82, Gordon Street.

The showrooms are situated in the heart of the business centre of the city, looking on to the chief railway terminus, the Central Station, and adjacent to St. Enoch, Queen Street, and Buchanan Street Stations.

In the spacious principal showroom, a part of which is illustrated in the accompanying photograph, there is a splendid selection of cookers and fires, including the fully enamelled "De Luxe" and mottled "Mainamel" cookers, the "Mainservor" series, and others of special and standard finishes. Two beautiful examples of the firm's gas fires are displayed in tasteful modern settings in this room of dignified decoration and furnishing.

Further examples of the firm's products, and those of their associated Company, Messrs. Thomas Glover & Co., Ltd., are displayed in the general office, adjoining which are the private office and a conference room, both of which are replete with gas fires in settings appropriate to the decorations and furnishings employed.

New Wrought Iron Process.—A new process for the manufacture of wrought iron is now being worked by the A. M. Byers Company, of Pittsburgh. The process was developed by Dr. James Ashton, of the Carnegie Institute of Technology. Whereas former attempts to produce wrought iron more cheaply were generally patterned after the efforts of the hand puddler, substituting mechanical means, the new process consists in impregnating the iron with slag by an operation known as "shotting." This is accomplished by pouring the molten iron into a bath of slag. Pig iron is melted in a cupola, after which it is refined in a converter. The metal from the converter is then poured into a bath of slag, whereupon the metal is broken into pea-sized globules by the action of the gases which are liberated. Then the excess slag is poured off, and the sponge of metal remaining, weighing about a ton, is dumped out and passed through a blooming-mill. Subsequent operations are in accordance with previous practice. The new process is said to be able to produce as much wrought iron in 20 minutes as can be turned out by two puddlers working a 10-hour day. At the same time, the quality of the iron is conceded to be as good as, if not better than, the puddled product. The A. M. Byers Company is projecting a new plant to exploit the process, to be located at Ambridge, Pa.—"Iron and Coal Trades Review."

DEVELOPMENT OF GAS SALES IN IRELAND.

By W. H. AINSWORTH.

[Paper before the Irish Association of Gas Managers, Aug. 13, 1929.]

This subject covers such a wide field that a volume might be written on it with regard to every individual undertaking in the country. It will readily be appreciated, therefore, that many of the remarks, criticisms, and suggestions offered may not apply to the particular gas company you individually represent here to-day, but the writer's object is to provoke a great amount of thought on this very important subject by all who are interested in this industry, and to put forward suggestions in tabulated form which may be of service and act as a reminder of avenues of progress known but possibly overlooked.

Looking back over the difficult years that have gone, through the war period (1914-18) and the internal difficulties which followed—the coal strike, &c.—one cannot but be struck by the amazing courage, faith, and tenacity of the gas industry in Ireland as a whole. When coal was short and labour unobtainable except at a prohibitive price, then was the time when managers of even big works took off their coats and overcame their difficulties by the sweat of their brows. Cases are known where sawdust and tar were used to make gas, and where gas was made from crude oil at the risk of life and limb.

It is not intended to eulogize, but the spirit that put up such a fight against such odds is the spirit which is required to-day to bring about more fully, and to financial success, the development of gas sales in Ireland.

The only real reply to the big efforts being put forth by the Governments of both North and South to develop our "baby" industry—*i.e.*, electricity—is to realize that for us there is no boundary, in that our efforts, though individual, are united, and that they must transcend those of our rivals in the field.

DIFFICULTIES OF SMALL UNDERTAKINGS.

Dealing first with the difficulties of the small undertakings. These can generally be classified under the headings of: (*a*) Financial difficulties; (*b*) lack of assistants; (*c*) lack of faith.

The lack of money where an undertaking has been fighting all the adverse conditions which have obtained during the difficult years that have gone is readily understandable and difficult to overcome. Confidence has been weakened, and the only remedy which can be offered is a making of the most of the following suggestions, and others which will have occurred to you, until such time as further capital is no longer required, or appeals can be made to the public with confidence.

The question of the lack of assistants is, of course, bound up with the financial one, but it should not be difficult to make the prospects of promotion so alluring to young men as to attract the right type of youth, to give them a thorough training while using their services at very little cost, and so secure the needed assistants. This matter revolves round the status of the gas industry as a profession and is a fit subject for a separate paper.

The lack of interest on the part of the public and their almost fanatical belief in the Shannon Scheme is one which can only be overcome by constant daily propaganda—not decrying electricity, but setting forth the advantages of gas for lighting, cooking, heating, hot water, washing, and power.

SOME SUGGESTIONS FOR "SMALL" MANAGERS.

The suggestions offered to managers of small undertakings for the development of their gas sales are these:

(*a*) The exploiting of advertising by every possible means—on account forms, by regular and systematic distribution of literature, which the makers of apparatus will supply free, in local papers, with whom it is usually possible to arrange cheap rates, by using the local cinema for a regular display of attractive slides, by posters, even by lamp-posts.

THE VALUE OF A FREE BOILING RING.

(*b*) By the putting out of an efficient boiling ring free to anyone who wants one. There are many undertakings to-day who owe their success to having accustomed consumers to the idea of cooking by gas in this way. It is an easy step from the boiling ring to the cooker, and the cost is small. At a town in the North, with a consumption of about 5 millions, it was found extremely difficult in the summer months to make enough coke to keep the furnace going, and the stokers were only called upon to work five-day shifts per week. In the hope of overcoming their difficulty, some seventy additional cookers were put out, mostly to boiling ring users, last year. The result has been that this summer the load has increased 25 p.ct., and to-day not only do the stokers work the full seven-day shifts per week, but it is necessary for them to work one or two night shifts per week. Coke is now for sale in this town. The consumers of this town had realized the probable advantages of a cooker by their acquaintance with the boiling ring.

MAKE USE OF THE TALKATIVE CONSUMER.

(*c*) By putting out apparatus to talkative consumers free, or on three months' trial, the risk is small. One of the larger undertakings recently tried the experiment of putting a hot water boiler of a new type, which is difficult to demonstrate unless properly connected up, into the houses of two prominent and popular consumers. The one was a wealthy shipowner and the other a publican. A verbal agreement was made that if they were satisfied they would pay for the boilers, but otherwise the gas company would take the boilers back without obligation. The consumers, being entirely satisfied, kept the boilers and paid for them and the fitting, and became an important agency through which this boiler has become, and is still becoming, increasingly popular. Every manager must at times receive a request for some apparatus similar to that of "Mrs. —— next door"—clear evidence, if such is needed, that the talkative consumer is one of the best advertising mediums there is.

SHOWROOMS AND LIGHTING.

(*d*) By the opening of a showroom in the centre of a town, no matter how small the room may be, and by keeping it clean and well lighted, and by the display of up-to-date apparatus, showing clearly the price of everything, and, if finances will allow, by the running of a hire-purchase scheme for as long a term as possible.

(*e*) By treating the question of lighting by gas in your own minds and in conversation with consumers as the ideal method, combat other lighting mediums by demonstration everywhere that gas is the best light for the eyes and is the cheapest. If this is done, while some lighting will be lost when the Shannon Scheme comes, it will not be as much as might otherwise be expected. Talk of costs, but be sure of facts. Gas piping is nearly always already in, and wiring of houses costs a lot.

BUSINESS LOST AND REGAINED.

Some very interesting figures with regard to the speed at which gas consumption, lost through the introduction of electricity, was regained, is given below, through the courtesy of Mr. Wilfred Tallentire, Engineer and Manager at Lurgan:

Consumer.	Using.	Consumption, Jan.-March 1927. C.Ft.	Consumption, Jan.-March, 1929. C.Ft.	Increase. C.Ft.	Decrease. C.Ft.
Shop with house above	Lights and cooker	11,400	8,700	..	2700
" " " "	" " "	5,600	6,800	1200	..
" " " "	Lights and ring	1,900	1,600	..	300
Shop	" " "	600	800	200	..
"	Lights and cooker	5,100	4,100	..	1000
House	" " "	9,600	9,400	..	200
"	" " "	13,200	12,900	..	300
Licensed premises and house	" " "	11,500	15,400	3900	..
House	" " "	8,000	10,000	2000	..
Shop with house above	" " "	4,400	3,600	..	800
Licensed premises and house	" " "	5,300	4,300	..	1000
Shop with house above	" " "	4,600	3,600	..	1000
		81,200	81,200	+7300	−7300

In presenting these figures, it should be explained that the instructions given to the rental clerk who got them out were simply to give the consumptions for the corresponding January to March quarters of 1927 and 1928 of consumers who went over to electric lighting in 1927, with the stipulation that there must have been no change of tenant in the houses during that period.

The fact that the increase and decrease balance is purely a coincidence, but it serves to demonstrate that among ordinary meter consumers, in Lurgan at least, there appears evidence that in two years the consumption lost has been regained. It should be pointed out that during the period of the above figures trade in Lurgan was bad and money scarce. In that period, several of the gains were from shops where it is reasonable to expect there was originally a fairly heavy consumption from gas lighting; it is difficult to explain the increase. A highly probable explanation is that when consumers found their gas bills had become less they began to use their gas apparatus more freely, and that they quickly came to re-

gard their electricity bills as an added liability rather than to look upon the saving from their gas bills as the means of paying their electricity account. It would be interesting to learn if the experience of managers who have been faced with electrical competition for some time has been of a similar nature.

(*f*) By pushing more extensively the sales of wash-boilers and hot water apparatus—fitting-up managers' own houses firstly in this way. A therm of practice is worth a holder full of precepts! By making your own houses and offices show-places for gas apparatus—well fitted. Hot water is a field that is full of promise and has hardly been touched. In this connection particular note should be made of the scheme under heading (*d*).

Co-operation with Local Traders.

(*g*) By co-operation with local traders. By getting in touch with local builders and architects—finding out what they are doing, and offering well-thought-out schemes for "all-gas" houses. A scheme which has met with considerable success among certain undertakings in England has been the payment of a small percentage, weekly or monthly, to local traders on all business introduced by them. The trader calls or telephones to say he is sending in a certain consumer, or himself brings them to the showroom. Any order resulting is credited to him. As he has not to worry about the financial aspect of any transaction that results and is sure of the prompt payment of his percentage, his co-operation is usually whole-hearted, and the results of benefit to the gas undertaking and himself. A big advantage to the gas undertaking is that approved apparatus goes out and it is properly fitted.

Taking a Census.

(*h*) By the taking of a census of all lights and apparatus in the town. It might possibly come as a surprise to many managers who pride themselves on their knowledge of the apparatus in their district were they to take a census, to find what a large quantity of appliances there are of which they have no knowledge. The importance of a census, however, lies in its value as an indication of which districts in the area require concentrating upon.

An undertaking in Wales has hit upon the idea of putting up under the eye of the manager and staff an up-to-date ordnance map. As the fitters, collectors, and other members of their staff visit the various consumers they make a note of the lights, cookers, wash-boilers, gas irons, &c., in use in each house, and report on them to headquarters. Should a house be "all-gas" it is coloured on the map (say) red, a house with gas lighting and cooker, blue, a house with lighting only by gas, green, and so on. It is then possible to see at a glance which districts offer the biggest field for development and concentrated effort can be made. The actual record of the lights, type, and age of apparatus, &c., would, of course, be kept in a properly tabulated file, and all alterations and increases or decreases recorded.

Suggestions for "Big" Managers.

In the larger undertakings (20-100 millions) many of the foregoing suggestions may have been applied with considerable profit, and if the enthusiasm is maintained there is little to fear. In the belief that the financial strength of the larger undertakings is generally greater, the following suggestions are offered:

(*a*) That as many old appliances as possible be replaced.

(*b*) That apparatus having attained a generally high standard of efficiency be maintained by employing a man qualified not only to undertake systematic maintenance, but able to advise consumers as to the best new appliances, lights, &c., to instal.

Large undertakings, as a rule, have their own qualified distribution superintendent or engineer whose whole time is given to the consideration of this subject, and the carrying of it into practice, so that most of the suggestions contained in this paper have been carried into effect. It has been observed, however, that our friends the electrical undertakings have, generally speaking, secured a handsome showroom in the centre of the main shopping centre of the various large towns, and these showrooms have been tastefully laid out, and are generally brilliantly lighted day and night. It should be possible to take a leaf from their book and do likewise, making a point of fitting-up all apparatus on show as far as possible in their correct settings, changing window displays weekly or fortnightly at the most, and employing keen, energetic, and courteous salesmen.

The Exhibition as an Advertising Medium.

It may have been observed that no mention has been made of exhibitions as a means of development in small towns. From a fairly wide experience of exhibitions, the writer has been forced to a conclusion with which possibly some managers may disagree. The conclusion is that as an advertising medium, exhibitions, with certain well-defined exceptions, are costly in comparison with the results obtained, and do not give adequate return for the money, time, and labour expended.

The exception is the town where definite building developments of artisan houses in quantity have taken place. In the north, at least, the Government is assisting local authorities by a grant of £100 per house of an approved type, together with remission of rates for eight years from the inception of the scheme, which remission decreases as each year passes. This has encouraged the building of houses, each tenant of which is a potential gas consumer. A scheme is also in operation in the south, but it does not appear, except in the larger towns, to have made such an appeal, though the reason is not apparent. In towns where building development of this nature is taking place, an exhibition may prove of practical value.

This paper deals but briefly with a subject which it will pay every manager to study seriously, its object being to call into being once more that courage and tenacity so well displayed by the Irish gas managers in the years that have gone. Year by year the increase in the sale of gas has been maintained, in spite of all difficulties, as the published figures will show. There is no prospect of a new world where electricity is not, but every prospect of gas entering into a new era of usefulness and progress.

Discussion.

The President (Mr. L. W. Dalby, Wicklow) asked whether they were sufficiently careful of the type of man whom they employed as a gasfitter. A gasfitter in small, and even medium sized, towns came more in contact with the consumer than any other member of the undertaking; and if they put on for this work a young man of good address, with a keen interest in the business, he was of more value to the concern than many a showroom. ["Hear, hear."] They should think very carefully about the young men they employed, trained, and sent out on their districts as gasfitters. This was a very safe policy to adopt.

Difficulties in Small Works.

Mr. J. M'Nicoll (Cork) remarked that the subject of the paper was the most important one which could be placed before the members. The President had indicated in his Address, in a way, the road which they should travel; and Mr. Ainsworth had given them some very valuable hints as to how to tackle many of the problems they would meet on this road. The author had spoken of the lack of assistants on many works. This, he (the speaker) was afraid, was a sore point with many gas managers. Especially in the smaller works, and also even in some of the medium sized concerns, one frequently found a manager up to the neck in routine work, and with no time whatever to plan or initiate anything in the nature of work leading to progress. The fact was that they, as managers, could not do much about this. It was a matter for Boards of Directors and proprietors of gas-works. Reference had been made in the paper to financial difficulties. Financial difficulties of most of the gas-works in Ireland had been due, to his mind, to lack of common sense and foresight. Unfortunately, it seemed to be too frequently the custom, in connection with small concerns, to take everything possible out of the works, and to spend as little as possible on them. Now, it must be clear to them that no industry could thrive under such conditions. Mr. Ainsworth had also spoken about looking after burners, &c. This naturally led to the subject of maintenance; and the members might occupy a whole meeting on this question, which was one that would well repay discussion. He had also made mention of advertising, and there was no doubt that it would be a very dull person indeed who would fail to recognize the value of advertising nowadays. In Ireland everyone was realizing its value, and taking advantage of it.

Send Out a First-Class Commodity.

Mr. F. J. Edmonds (Waterford) said that one item which had been missed by the author appeared to him (the speaker) to be of paramount importance—namely, the quality of gas which they were going to sell. It should be the aim of every manager to ensure that his customers secured what they paid for. If one paid for (say) 500 B.Th.U. gas, and the manager sent it out at 500 B.Th.U. on some occasions, then at 560 B.Th.U., and afterwards at 350 B.Th.U., he was afraid this would have a very bad effect on the mind of the consumer. He, therefore, laid very great stress on the importance of every gas undertaking seeing that the quality of the article sent out was first-class in every way. It was no use having up-to-date appliances, if the quality of the gas was to be such that it could not be consumed with uniformity. The adoption of a hire-purchase scheme meant that a tremendous amount of capital would be locked up for a considerable number of years; and unless they could get some little relief from the makers of the appliances, it must mean that the cost of having this capital so locked up would have to go on to the price of gas. This was a matter which he would recommend those concerned to consider seriously; and he hoped the firms would be able to fall into line and generally offer good hire-purchase terms. Some, he knew, were already doing it, but not all. With reference to fittings, he was impressed with the principle of "Taste and try, before you buy." They had found this a sound policy in Waterford. In the case of one firm, it had taken about 4½ years to introduce a modern lamp; but as the result of getting this one in, the whole of the shop had been re-conditioned, involving a large outlay on new fittings. When a consumer had once experienced the advantages of a new type of lamp, he quickly became dissatisfied with the older system. In approaching consumers, stress should be laid on the importance of climatic conditions in Ireland. There were many lock-up shops and premises which required light and heat only for (say) four-and-a-half months in the year, but they happened to be the winter months, when one got what were called "soft" damp days. If the man who came in contact with the consumers drew attention to the way in which gas ventilated a shop and kept goods in sound condition, this would prove a big point. As

to advertising, he was not quite sure whether a regular system of ordinary advertising, or advertising in the local Press and cinemas, was altogether the best. Something out of the way should be selected. In Waterford, they had been able to give an exhibition, which he regarded as an ideal form of advertising. To those who had not tried this, and who thought their towns were "saturated," he would like to say that the Waterford exhibition was a great success. They sold cookers from £60 down to £4. The general trades were so envious of the success obtained, that they were going to hold an exhibition themselves, purely as the result of the foresight of the Waterford Gas Company in organizing their own exhibition.

Enthusiasm Must be Maintained.

Mr. R. BRUCE ANDERSON (London) said that it was a great pleasure to him to be once more at a meeting of the Irish Gas Managers. It was many years since he himself passed through the Presidential Chair of the Association; and it was gratifying to see again members whom he had known for 30 or 40 years. He felt he must congratulate the President on the fact that some other old members who used to be in Ireland had also come across the Channel to support him. He had been very much struck with the suggestion made by Mr. Ainsworth in his paper regarding free boiling rings. This was an excellent idea, and, as had been indicated, generally led to an extension of the use of gas from the boiling ring to the cooker, from the cooker to gas fires, and so on. With respect to showrooms, he must confess to holding a very divided opinion. The author had stated that he considered exhibitions a costly method of getting business. He (the speaker) was not quite sure that a showroom was cheaper. It depended a great deal upon the size of the works and the potentialities of the neighbourhood. It cost as much to run a showroom in a small town as in a large one, and the business necessary to cover the overhead charges was not to be had in the former case. It was, therefore, a question which needed serious consideration. The cost of a showroom did not end with the rent. One had to staff it and to stock it; but, of course, manufacturing firms were very helpful in the latter respect. With regard to wash boilers, in England, in the case of every artisan's house, they seemed to look upon the wash boiler as almost the first thing to be got in; but in Ireland these appliances appeared to be practically a dead letter. Queenstown was the only place he knew of on that side of the Channel where real success had been obtained with the wash boiler, and this was owing to special circumstances. The idea of having a marked ordnance map was extremely good. This, if coloured and hung up in the office, would indicate the localities to which it was desirable to apply particular energy.

Another point he would stress was the necessity of maintaining enthusiasm. He found a great many managers were enthusiastic for a time in certain directions; but their enthusiasm was inclined to flag, and this, considering the circumstances, was not really surprising. They had, however, to remember that constant dripping wore away a stone. Whatever the difficulties with which they might be faced, they must keep going until success rewarded their efforts. With regard to the remarks of Mr. Edmond, he agreed that salesmanship depended essentially upon regularity in the supply of gas. A low value which one could be certain of maintaining was better than aiming at a high value which it might sometimes be impossible to keep to.

Price of Gas the First Consideration—Enterprise at Midleton.

Mr. P. J. M'EVOY (Midleton) expressed the opinion that the progress of the gas industry in Ireland altogether depended upon something which the author had not mentioned. He quite agreed with Mr. Edmonds that a uniform supply of gas was absolutely essential, but he thought the first thing they should bear in mind was the selling price. It was all very well to start a big propaganda in the face of gas at 10s. per 1000 c.ft.; but against competition backed by the Government, this was hardly likely to be of use. They might be surprised to hear of what was done in Midleton. Some fifteen years ago, he was told that they had reached saturation-point, and looking round he certainly could not see what they were going to do to develop their sales of gas. Eventually, however, he got his directors to adopt a system of free cooker installation. This consisted of a packed cooker and two lights absolutely free—and that in a small gas-works in the South of Ireland. This policy had been further developed since the coming of the Shannon scheme. The undertaking had spent £2000 on free installations. Last year the outlay on cookers amounted to £470; and he had put these into the houses of poor people. It was essential to understand the mentality of some of the inhabitants of the smaller towns. In Midleton, at the moment, the greatest source of revenue was slot installations. The scheme which he had outlined placed in the hands of the poorer classes a means of cooking altogether better than anything of which they had previously had experience. At present the price of gas in Midleton ranged from 5s. 6d. to 6s. 11d. per 1000 c.ft. It was upon the price of gas that everything depended.

The Gas Industry and the Shannon Scheme.

Mr. T. J. REID (Ballina) remarked that the thanks of the Association were due to Mr. Ainsworth, who, by reason of his business, had a unique opportunity of discovering the conditions obtaining in the various gas undertakings of Ireland. It was good for them to see themselves as others saw them, and he was sure they would all profit greatly by the advice which had been given them. The author had paid tribute to the gas managers of Ireland for the attitude which they had maintained during recent hard times, but he rather implied that this attitude was not being maintained. He hoped Mr. Ainsworth had not the idea that they were lacking in spirit and faith, and all other desirable qualities. Such an opinion would be hardly fair. They had had a paper which had provoked a good and profitable discussion, and this was what they wanted. It was to be regretted that gas managers did not themselves come forward and record the little things that they came across in their working. Mr. Ainsworth had referred to the Shannon scheme, and this was a matter to which he himself would like to direct his remarks. He would be glad to have the opinion of the meeting as to what should be their attitude, as an industry, towards the Shannon scheme. He did not think any of them would be in favour of remaining apathetic to it. They were up against it even in the most remote parts of Ireland. It did not seem to him that they should be pessimistic, but they should also not be too optimistic; the correct line lay between the two.

They were aware that the Electricity Supply Board had started on a huge scheme of propaganda; and the gas industry should counter this by an equally strenuous course of propaganda. He agreed that they should not depreciate electricity in any shape or form. It had its duties to perform, just as had the gas industry. This was a national electricity scheme; and while they might imagine that the State would hold the balance evenly between the two industries, in this case he felt that it would be too much to expect that the State would not try to advance their particular scheme to the disadvantage of the gas industry, if so allowed. Some people might talk about compensation if the gas-works were put out of action; but this was assuming that such a thing would happen, which would not be the case. All they wanted was to be left alone to develop their business in their own way without restriction. They desired only fair play, but were they going to get it? Looking at things as they had progressed so far, he did not think they were. He imagined the Electricity Board, if permitted, were going to ride roughshod over all and sundry. As regarded advertising, they saw that the Electricity Supply Board were advertising largely that electricity was the most economical for lighting, heating, and power purposes. This was not true, and why could not the gas industry contradict it by advertising in the public Press that gas was cheapest for these purposes? All gas undertakings in the Free State at least could unite in carrying on propaganda for the purpose of putting forward their own case. Those who saw the works connected with the Shannon scheme could not come away without being impressed by the magnitude of the undertaking. From an engineering point of view it was immense, and the scheme being a national one people might be influenced to support it.

A Committee Suggested.

The members should not depart from that meeting without appointing a small Committee to consider the question and formulate some definite scheme whereby they might as an industry put their case properly and thoroughly forward. Mr. Ainsworth in his paper had placed the financial difficulty of small undertakings first, and correctly so. It was certainly a very serious one, and the reason was to be found partly in the troublous time through which they had come, but not only so. The industry had developed, and a good deal of the money that had been sunk in development (say) twenty years ago was now lost. They were starting on a new career, but with the weight of the old capital hanging round their necks. The author said the only thing to redeem the situation was to push cookers, &c.; but in order to do this small undertakings which were financially embarrassed were not able to raise the capital necessary to provide the apparatus. He suggested that, to aid such undertakings, the firms who manufactured these appliances might do what was done in many other trades without any sense of loss of dignity. Other things could now be purchased on the instalment system; and he asked why the stove manufacturers could not, for the small towns, supply apparatus on an instalment plan. The money would be safer than was the case in many other industries. It would be a fine thing if every gas manager in Ireland would come to the meetings of the Association. They ought to support the industry, and come along and give the members the benefit of their knowledge. In small works there were not the facilities for maintaining uniformity of gas supplied that were to be found in large ones. This was a great difficulty in retaining the lighting load. In that country the question of climatic conditions was most important. The value of gas in maintaining in good condition stock in shops and stores should be stressed. In Ireland the damp atmosphere injured stock when electricity was used.

Increase the Gas Used per Consumer.

Mr. H. W. SAVILLE (Wexford) said that the greater part of the paper dealt with matters which they all came up against at one time or another. He himself was an absolute convert to the idea of showrooms. For some time he had had doubts, but ultimately he took his courage in both hands, and provided showrooms in a good position. Not only had he been satisfied, but he had been amazed, and even embarrassed, by the results. So much so, indeed, that he had begun to think there was no such thing as "saturation." Some of them had been working on wrong lines. They had been canvassing for new consumers, when they were not making half the use that they might of their existing customers. If one studied the average consumptions of consumers in Ireland, it would be found that even in neighbouring districts the figures varied enormously. The great thing was to work-up the consumption per customer, as this meant making additional use of existing services and meters. To his mind, this was a point to be kept to the front.

Meeting Electricity Propaganda.

With regard to employing gasfitters as "ambassadors" of the undertaking, Mr. Saville said that, when the Shannon scheme came into Wexford, he called his fitters together, and talked to them very clearly. He said to them: "You are just as much interested in this matter as I am. Your living depends upon it, the same as mine does." One of the fitters asked: "What can we do?" He (Mr. Saville) pointed out that the Electricity Board were sending canvassers all round, and that the fitters were in and out of the different places; and what he wanted them to do was, if they saw a canvasser going into a house, to follow in after him and put their

own side of the case before the people. The men had entered into the spirit of the thing, and had even gone out after hours to combat the electricity propaganda, with the result that the Shannon Engineer had stated that the town was the worst one he had struck. It was a pleasure to him to second the vote of thanks to Mr. Ainsworth, not only for the paper which he had contributed, but for the discussion which it had evoked.

GROSSLY EXAGGERATED PROPAGANDA.

Mr. G. WALMSLEY (Londonderry) said that, as the Manager of a works outside the Free State, and therefore not at present up against the Shannon scheme, he sympathized very much with the members in their present position. The propaganda of the Electricity Board was, to say the least, grossly exaggerated, and therefore it was up to the gas undertakings of the Free State to do what they could to combat it. He thought it would be unwise for the Association to try to combat anything that the Government were putting forward as a national scheme. It would be wiser for them to leave the matter in the hands of the national organizations. Seeing that they had Mr. Fottrell and Mr. Mason with them, it would perhaps be better if their Committee took the opportunity of discussing the question with them before anything was done as an Association. If they put up the backs of the Free State Government, who, rightly, were anxious to do all they could to make the scheme a success, he did not think that they, as an Association, without the backing of the national organizations would have very much success. With reference to the Bedford scheme in England, he believed that the national organizations had taken up this matter and devoted great attention to it, so that some useful information might be forthcoming with regard to what they were doing to combat a similar sort of thing to that which they were themselves up against in Ireland.

SHOWROOMS THE FINEST FORM OF PROPAGANDA.

Mr. JOHN J. PATERSON (Dover) remarked that, after an absence from Ireland of over ten years, he would like to express his delight at seeing so large a gathering. On the occasions when he had attended the meetings of the Irish Association, he could not recall a bigger assembly. He would like to congratulate the President on having struck in his address a very optimistic note, thus giving encouragement to everyone around him to go forward and continue the good work. Having spent eighteen or twenty years as a gas manager in Ireland, he could fully realize the enormous difficulties which they had to face; but he would not care for them to think that they in England had no such difficulties, because they had. They had as big a fight in most places in England against competition as they had had, up to now at any rate, in Ireland. There were certainly factors they had to contend with in Ireland which did not exist on the other side of the Channel; but nevertheless they all had to fight continuously, and must not allow their energies to flag. Mr. Ainsworth, in his very useful paper, had put forward suggestions from which everyone could benefit. Most of them, of course, had been adopted from time to time by a good many managers; but there were one or two points which were outstanding. Prominent among these was the question of the showroom. He (Mr. Paterson) was a great believer in the showroom, which was the finest form of propaganda that any gas undertaking could embark upon; but it must be a showroom in the true sense of the word. To secure any definite results, one must have a good showroom in a good locality, well kept—he would stress the words "well kept"—and properly staffed with capable assistants. In his own case, when he took up the appointment he now held, there was a small showroom in a back street—a showroom in name only. This condition of affairs was altered by the securing of some of the finest premises in the heart of the town, on which a very considerable sum of money was spent. As a consequence, they possessed one of the best showrooms in the Provinces of England, and the results had been wonderful. They had experienced an enormous increase in the sale of gas. Consistency in the quality of gas sent out was vital; and regularity of pressure, as far as possible, was also of great importance.

METHODS OF CHARGE.

Mr. JOHN RICHMOND (Penicuik) said that he had been greatly impressed by the amount of energy and enterprise exhibited in Ireland. That country was one of the first to adopt the principle of free installation. Thirty years ago there were many such schemes in Ireland. The question of price was, of course, of prime importance in connection with sales of gas. The British Commercial Gas Association and the National Gas Council had lately taken up the subject of methods of charge. A fixed charge for a minimum consumption, and a reduction for amounts used beyond that, would result in a great increase in the output of gas.

THE ATTITUDE TO ADOPT.

Mr. A. LAW (Limerick) said he had secured several orders in connection with a warehouse on account of the importance of gas from the climatic point of view. Excellent results were to be secured from the training of youths to go round and show people who were burning too much gas for lighting how they could reduce their consumption. Thus they obtained satisfied consumers. Members were inclined to look upon the Shannon scheme as a tremendous bugbear. They could not, however, stop progress, and it was better to welcome it and face the situation squarely. Hire purchase was a good thing, if the people who were pushing the sale of appliances would help gas managers in the matter.

Mr. E. J. FOTTRELL (Joint Manager of the National Gas Council) remarked that, as reference had been made to the national organizations, he would like to say that nothing would give them greater pleasure than to take up this question of how to meet the Shannon scheme from both the point of view of policy and propaganda. It was not a matter of trying to fight a national scheme of this kind; they must tackle the situation and see exactly what it amounted to. If Mr. Law, situated, as he was, more or less in the centre of the maelstrom, could speak as he had done, those farther from the storm-centre might take heart.

Mr. W. M. MASON (Manager of the British Commercial Gas Association) said that, from a salesmanship point of view, they could not properly counter the competition of the Shannon scheme by controversial publicity.

Mr. REID interposed with the remark that they might welcome the Shannon scheme, but at the same time put their own case forward.

Mr. MASON (continuing) said the great thing to do was to spread the conviction that gas was the most up-to-date thing to-day. It was more up to date than electricity. The mental attitude was of the utmost importance. They need not be ashamed of gas because it was 130 years old. Many people had not an idea of what gas could do. If once its capabilities became thoroughly understood, the whole circle of service took on an altogether different aspect.

Mr. J. RONAN (Waterford) said that, as a consumer, he had studied the method of charging in connection with the Shannon scheme, and there was one great weakness in it. He thought it would be found that a great number of offices, lock-up shops, &c., would be forced to get rid of electricity for lighting, and instal gas in its place, owing to the method of charging for current according to the valuation of the premises. This basis was absolutely unsuited to offices. There was great scope for the gas industry to go round to offices and lock-up shops and explain this point to the occupiers.

Mr. AINSWORTH, in acknowledging the vote of thanks, said he had been induced to write the paper because of the fact that a number of managers of small works had confided to him that their real difficulty was that they could not get their Directors, Councils, and Committees to realize what they themselves did—that gas was going ahead. They therefore desired a paper which would show these administrators just what gas was doing and was able to do. Personally, he did not think the managers lacked faith.

SAFETY IN MINES RESEARCH BOARD.

The Committee of the Safety in Mines Research Board, studying methods of preventing accidents from falls of roof and side, have been carrying out, in addition to experimental work, a survey of colliery practice as regards the support of underground workings, with a view to calling attention to the best methods and suggesting improvements where possible. The Committee have just published their fifth report (Safety in Mines Research Board, Paper No. 55) dealing with "The Support of Underground Workings in the Coalfields of Lancashire, Cheshire, and North Wales." The Committee's first four reports related to the coalfields of South Wales, Scotland, the East Midlands, and the South Midlands. The fifth report, like the earlier ones, is illustrated with numerous sketches and plans showing the methods of working and of supporting the roof. In addition to a summary of the recommendations, the report includes, among the appendixes, descriptions of a number of common accidents and notes as to ways in which they might have been avoided. The paper is published at the nominal price of 2d. net, to bring it within the means of all classes of workers, and is obtainable from H.M. Stationery Office, Adastral House, Kingsway, W.C. 2.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Effluents and the Phenol Problem.

SIR,—The translation of the paper by Dr. Max Pruss on the work of the Emscher Commission relating to ammonia plant effluents, which appeared in your issue of the 21st inst., will have been studied by many of your readers with great interest. The subject of effluent disposal has attracted considerable attention in this country for some years; and it is therefore somewhat surprising to find that, in his discussion of the position in Great Britain, Dr. Pruss does not mention either the work of the Liquor Effluents Research Committee of the Institution of Gas Engineers or the earlier and extensive work of Dr. T. Lewis Bailey.

May I be permitted to call your attention to an error which occurs in your translation from the original German? On p. 406, in discussing the operating costs of the type of plant adopted by the Emscher Commission, the figure of £50,000 is given as the capital cost of a plant capable of recovering approximately ½ ton of phenol per 24 hours. This should read £5000, as shown by the subsequent calculations.

T. CAMPBELL FINLAYSON.

Allington House,
Victoria Street,
London, S.W. 1,
Aug. 26, 1929.

MISCELLANEOUS NEWS.

NEW GAS-WORKS AT HULL.

Too Near Aerodrome Site?

An unexpected development in connection with Hull's municipal aerodrome at Hedon, which threatens to deprive the Corporation of a provisional licence, was considered privately by the Aerodrome Committee on Aug. 21.

It became known recently that the East Hull Gas Company, who have taken over the Hedon supply, contemplate the erection of a new gas-works on land not far from the aerodrome site, and representations have been made to the Corporation that the conditions attaching to the Air Ministry's licence provide that there must be no factory or works near the aerodrome which might constitute a source of danger to aircraft.

It is stated that the Gas Company has already purchased the site for the erection of the gas-works. The site covers 16 acres, and is situated near the road and railway.

The Corporation paid £17,000 for the aerodrome site, which was formerly a racecourse, and are levelling the ground in preparation for the opening ceremony by Prince George on Oct. 10.

The Committee decided to open negotiations with the Gas Company.

ROYAL SANITARY INSTITUTE.

Course of Lectures and Demonstrations for Smoke Inspectors.

In connection with the Public Health (Smoke Abatement) Act, 1926, which came into operation on July 1, 1927, the Ministry of Health suggested that the officials responsible for the abatement of smoke nuisances should be specially qualified, and that there should be courses of training for them.

In 1912 the Royal Sanitary Institute established an examination qualifying for the post of smoke inspector; and in order to assist candidates who are preparing for this examination, the Institute have arranged for a course of ten lectures covering the syllabus of the examination, and for practical demonstrations at works illustrating the management and working of different types of furnaces.

The fee for the course is £1 10s.

LECTURES.

At 6 p.m.

Monday, Oct. 7.—The laws, by-laws, and regulations affecting the emission or prevention of smoke, and methods of procedure in dealing with offenders.

By LAWRENCE W. CHUBB, *Secretary, Coal Smoke Abatement Society.*

Friday, Oct. 11.—The general principles underlying the production and transmission of heat; elementary chemistry of combustion.

By J. G. KING, Ph.D., F.I.C.

Monday, Oct. 14.—Fuels: solid, liquid, gaseous; different kinds of coal in use; their attributes, the locality whence obtained; special fuels.

By Dr. KING.

Monday, Oct. 21.—Combustion efficiency, boiler practice, chimneys; height, natural and artificial draught, and its measurement; composition and temperature of escaping gases: Proportion of carbonic acid as an indication of furnace efficiency.

By G. A. RENTON, M.I.Mech.E., A.M.I.Chem.E.

Monday, Oct. 28.—Furnaces: the essentials of construction; various types in use; purposes for which they are used.

By W. NEWTON BOOTH, B.Sc.(Lond.), Assoc.M.Inst.C.E., M.Inst.G.E.

Monday, Nov. 4.—Stoking: principles and practice of stoking; mechanical stokers; other apparatus and appliances for improving combustion.

By EDWARD W. L. NICOL, Assoc.Inst.C.E., M.I.Mar.E., A.M.I.E.E.

Monday, Nov. 11.—Smoke: nature and composition of; formation and predisposing causes; effects of various components of smoke on the atmosphere; vegetation and buildings.

By Dr. J. S. OWENS, M.D., Assoc.M.Inst.C.E., F.G.S.

Monday, Nov. 18.—Smoke prevention in boiler and other furnaces, and in domestic fires; conditions of smokeless combustion, methods of estimating or measuring density and colour of smoke; smoke charts and instruments. Other gases, dust and effluvia produced by combustion; their reduction and prevention.

By Dr. OWENS.

Monday, Nov. 25.—A general knowledge of the various industries in which furnaces are used, or from which products of combustion are given off.

By Dr. OWENS.

Monday, Dec. 2.—The main outlines of the application of gas, oil, and electricity, for the production of power in various industries.

By Dr. OWENS.

INSPECTIONS AND DEMONSTRATIONS.

Arrangements have been made for the students to visit the following works and institutions.

Wednesday, Oct. 23, at 2.30 p.m.—Visit to Messrs. Manbie & Garton, Ltd., Winslow Road, Fulham Palace Road, Hammersmith. Conducted by Mr. RENTON.

Wednesday, Oct. 30, at 2.30 p.m.—Visit to a power station. Conducted by Mr. B. SAMUELS.

Wednesday, Nov. 6, at 2.30 p.m.—Visit to a works where powdered fuel is used. Conducted by Mr. SAMUELS.

Saturday, Nov. 16, at 2.30 p.m.—Visit to the new L.C.C. County Hall, Belvedere Road, S.E. Conducted by Mr. NICOL.

Wednesday, Nov. 20, at 2.30 p.m.—Visit: Furnaces and Mechanical stoking. Conducted by Mr. LOWDEN.

Wednesday, Dec. 4, at 2.0 p.m.—Visit to the Fuel Research Station of the Department of Scientific and Industrial Research, River Way, Blackwall Lane, East Greenwich, S.E. 10.

GAS UNDERTAKINGS ACT ORDERS.

SECTION 6.

Ackworth, Featherstone, Purston, and Shariston Gas Company.

The Company shall, from Jan. 1, 1930, charge according to the number of B.Th.U. supplied, and shall on or before Oct. 1, 1929, give notice of the calorific value of the gas they intend to supply.

Blackpool Corporation.

The Corporation shall, from April 1, 1930, charge according to the number of British thermal units supplied, and shall, on or before Jan. 1, give notice of the calorific value of the gas which they intend to supply.

Braintree and Bocking Gas Company, Ltd.

The Company shall, from Jan. 1, 1930, charge according to the number of B.Th.U. supplied, and shall on or before Oct. 1, 1929, give notice of the calorific value of the gas they intend to supply.

Carnoustie Corporation.

The Corporation shall, from April 1, 1930, charge according to the number of British thermal units supplied, and shall, on or before Jan. 1, give notice of the calorific value of the gas which they intend to supply.

Connah's Quay Gas and Water Company, Ltd.

The Company shall, from Jan. 1, 1930, charge according to the number of B.Th.U. supplied, and shall on or before Oct. 1, 1929, give notice of the calorific value of the gas they intend to supply.

Holmfirth Gas Light Company.

The Company shall, from Jan. 1, 1930, charge according to the number of B.Th.U. supplied, and shall on or before Oct. 1, 1929, give notice of the calorific value of the gas they intend to supply.

Marlborough Gas Company.

The Company shall, from Jan. 1, 1930, charge according to the number of B.Th.U. supplied, and shall on or before Oct. 1, 1929, give notice of the calorific value of the gas they intend to supply.

DEAL AND WALMER GAS COMPANY.

Referring to the notice in our issue of the 14th inst. (p. 364), we are asked to point out that the stockholders' meeting held on the 1st inst. was quite informal; the notice calling the meeting only having been issued on July 29, 1929. Consequently, many shareholders could not attend.

The extraordinary meeting of stockholders asked for was held on the 22nd inst., after due notice. A resolution proposed by Mr. J. G. Tooms was rejected by a substantial majority.

The general result is that over £47,000 stock out of a total of £74,815 has been "ratified," and the owners of the "ratified" stock will receive £135 18s. 2d. each (inclusive of dividend) for £100 stock, which for some years past has had a market value of £103. The Company's dividend having been 7½ p.ct., the "ratifying" stockholders are to be congratulated on their bargain. Sympathy is extended to those stockholders who did not follow the advice of the Directors and Engineers to the Company.

Gasholder Over Lead Mine.—In the "JOURNAL" last week, p. 418, we mentioned that a gasholder at the Matlock Bath Gas-Works had been built over an old lead mine shaft, and that the crust over the top of this had given way, allowing the tank water to flow down the shaft. We stated that the Matlock Council had decided to engage the services of Messrs. R. & J. Dempster, Ltd., to examine the defective holder and report on the steps necessary for its repair. This is a mistake. Messrs. Robert Dempster & Sons, Ltd., of Elland, were engaged; they have reported on the matter and are now repairing the holder.

CAMBORNE GAS COMPANY.

A Year of Steady Progress.

Mr. J. R. ROWE (Chairman of Directors) presided at the annual meeting of shareholders in Camborne Gas Company held at the Company's offices, Trelowarren Street, Camborne. He was supported by Mr. S. J. Ingram (Vice-Chairman and Managing Director), Messrs. W. Lidgey and W. C. Vine (Directors), with the Works Manager (Mr. T. J. Greenwood), and the Secretary (Mr. Wm. J. Couch).

In moving the adoption of the Directors' report and balance-sheet, the CHAIRMAN said: We report an increased gas consumption of over ¾ million c.ft. This is not a spectacular or dramatic increase, but when we bear in mind the industrial depression in the district and the increase of previous years, to say nothing of the competition with other forms of light and power, it is certainly a matter for satisfaction that we can continue to show increase upon increase in our output.

I have no doubt the advertisement value of our new showrooms and the increasing consciousness of the value of gas in the homes as a labour and drudgery saving agent has brought about this satisfactory result.

Turning to the balance-sheet, there are one or two items upon which I should like to comment. First, you will be struck with the increased cost of coal for the year. This has been due to an increased consumption of coal owing to the increased demand for gas, and also a slight increase in the average cost per ton of coal for the year. As a set-off against this, there has been a considerable reduction in the cost of repairs to works and plant.

You will have noticed in our balance-sheet a considerable drop in the receipts from residuals amounting to nearly £600 for the year. This is a serious matter, and being a national slump, has been entirely beyond our control, and has, I fear, dispelled a hope we had cherished of being in a position shortly to announce a reduction in the price of gas.

Mr. W. LIDGEY seconded the motion.

Mr. INGRAM supported, and said: "It is a matter for great satisfaction to find in these days of industrial depression a small local undertaking which not only maintains its business, but actually increases its output. Our Chairman has reminded you that the sales of gas increased last year by over ¾ million c.ft. This has not been a spasmodic increase, but follows on substantial increases of previous years, so that we have every reason to expect that the demand for gas will continue at least at its present level.

While the receipts from gas show a satisfactory increase, those from residual products, coke, and tar have slumped very badly during the year, the decrease amounting to nearly £600—equivalent to 5s. 10d. per ton of coal carbonized, or 5d. per 1000 c.ft. gas sold.

On the motion of Mr. W. C. VINE, seconded by Mr. W. VIVIAN, J.P., a dividend of 6 p.ct., *less* tax, was declared.

TEIGNMOUTH GAS DEPARTMENT.

Engineer and Manager's Report.

The gross profit on the Teignmouth Gas Department, for the year ended March 31, amounted to £5080, which is to be applied as follows: Interest and repayment of capital, £3597, and to be carried to credit balance, £1483. The credit balance or working capital of the Department now stands at £4493, which is used to carry on the Department until the first quarter gas rental is collected, and to provide stores, &c. The total net income of the Department was £25,626.

The basic price of gas was 1s. per therm for 9 months of the year, and a scale of discount was introduced from Jan. 1, 1929, which gives a price for gas in large quantities of 9d. per therm. The total sales of gas were 80,325,700 c.ft., or 361,465 therms, which is an increase on last year's sales of 1·6 p.ct. The number of consumers increased by 82 to 2468. The average consumption per ordinary meter was 39,600 c.ft., or 178 therms, and the average consumption by slot meter was 22,500 c.ft., or 101 therms.

The amount of coal carbonized was 5004 tons, and 476 tons of coke and 22,239 gallons of oil were used for carburetted water gas manufacture. The total cost of carbonization was £9884, allowing for the price of the coke used to be the net price realized by the sale of coke. The average cost of coal fell by 1s. 4d. per ton, while the net price realized for coke was 4s. per ton less than last year's average. This fall in the price of coke made a difference of £500 to the revenue received from that residual, while coke prices generally are still falling, and a lower sum still will be received in the current year.

The revenue received for gas shows a reduction of £1215, allowing for the rebate due for March quarter, but more gas was sold. Had the same quantity of gas been sold, the reduction would have been £1490. Tar produced 4d. per gallon, against 4¼d. per gallon last year. This residual is also falling in price, due largely to bitumen products being substituted for tar for road purposes.

The sales of cookers, &c., have been maintained, and a total of 96 cookers, 75 gas fires, 10 radiators, and 78 boilers or geysers were sold. The revenue from these and from miscellaneous sales was £1040 from cash sales, and £782 from hire-purchase sales.

In the district, 894 yards of mains were laid. Plans were submitted for the removal of the town workshops to the gas-works, and a tender was accepted for the erection of new workshops and stores. These were completed in June, 1929, and the town depôts given up at the end of June.

There were 5 additional 200-C.P. lamps erected during the year, and at March 31 the lighting of the Teignmouth district was as follows: 26 500-C.P. lamps; 14 250-C.P. lamps; 336 200-C.P. lamps; and 3 sewer lamps; making a total of 379 lamps, of which 18 are all-night lamps.

THE BUSSEY PRIVATE EXPRESS.

A Record Non-Stop Run.

In connection with the opening of the Bussey coal distillation plant at Glenboig, on July 19, a further note in regard to the special L.M.S. train provided for the conveyance of guests to and from London may be of interest to our readers, particularly to those who were fortunate enough to be present on this remarkable run. The service was remarkable on account of the unique formation of the train itself, and also because the return journey of 395½ miles from Glenboig to Euston was made without intermediate stop, thus constituting the longest non-stop run ever made from Scotland to London.

The down train, which left Euston at 12.15 a.m., was made up of ten of the latest L.M.S.R. sleeping saloons giving accommodation for approximately 120 passengers. On arrival at Lanark (Racecourse Station), the guests were transferred to a day train in which breakfast was served before arrival at Glenboig. This train was later used for the return non-stop journey to London.

In addition to four restaurant and two kitchen cars, the train was equipped with two cinema cars, a lounge, and an observation saloon, the remaining coach of the total of eleven being a brake-first composite placed next to the engine.

Glenboig was left at 11.30 a.m., Euston being reached at 7.28 p.m., thus making the average speed just over 49·6 miles per hour. During the journey a special luncheon was served, and the after-luncheon speeches were relayed by broadcasting throughout the train. Cinema performances showing the Glenboig plant in detail were held in the two theatre cars at 2.45, 4.30, and 6 p.m., two different performances being held in each theatre.

The train was hauled by a "Royal Scot" class 4-6-0 engine, No. 6127, *Novelty*, in charge of Driver David Gibson, of Glasgow, and the front of the engine bore a large notice—Bussey Private Express—Glenboig to Euston.

INCREASED GAS SALES AT SALFORD.

Serious Decline in Revenue from Residuals.

In presenting to the Council their annual report for the year ended March 31, the Gas Committee of the Salford City Council record an increase in the sales of gas of 7,520,500 c.ft., or 0·27 p.ct., and also an increase of 532 in the number of consumers over the preceding year. The coal carbonized during the past year amounted to 136,510 tons, as compared with 135,717 tons for the previous year. The quantity of gas made was 1,964,324,000 c.ft., as compared with 1,979,815,000 c.ft. for the previous year.

The length of gas mains has been increased during the year from 346 miles 237 yards to 347 miles 1030 yards.

The business in gas appliances has been satisfactory. The total number of ordinary and prepayment gas cookers on hire at March 31 last was 29,301—an increase of 1454 during the year, and the total number of gas fires on hire at the same date was 8688—an increase of 303 during the year. These make a total increase for gas cookers and gas fires on hire of 1757 in the twelve months.

The receipts from the sale of gas and rental of stoves show a decrease, as compared with last year, of £57,420, due to the reductions in the price of gas which came into operation on Oct. 1, 1927, and on July 1, 1928.

The receipts from the sale of coke show a decrease of £4562, and there is a decrease in the receipts from the sale of tar of £11,686. This total decrease of £16,248 is, however, modified by an increase of £1714 in the sales of sulphate of ammonia, making a net total decrease in the receipts from residuals of £14,534. This large decrease in the value of residual products is most unfortunate, and has seriously affected the financial results of the year's working. It will be noted that the principal decrease is in the receipts from the sale of tar, but it is hoped that the new Co-operative Tar Scheme which the Committee have decided to join will improve the receipts from the sale of tar during the current year.

Illingworth Carbonization Company, Ltd.—The Directors have issued a progress report covering the operations from October, 1928. The Pearson & Dorman Long plant will be working towards the end of the year. The installation of the plant at the Allerton Main Colliery, which will deal with Yorkshire coal, is proceeding satisfactorily. T. & R. W. Bowen (Illingworth) Carbonization Company has been formed, with a capital of £75,000, to deal with the proposition. The Directors are Sir Richard Pease, Bart. (Chairman), Mr. S. E. Illingworth, Dr. S. Roy Illingworth, and Mr. H. Greener. Arrangements have been completed and a contract signed with the Canadian Improved Coal Corporation for the installation of a first 300-ton per day plant at Prescott. The Compagnie Française de Carbonisation Illingworth is developing the process in France, and has already contracted with the Mines de Courrières for a first plant of 250 tons per day. It has been decided to increase the capital of the French Company by three million francs. Arrangements are proceeding for the development of the process in Italy, and also in Australia, where the Australian Benzol Company has been formed with a capital of £300,000.

COAL TRADE REPORTS.

From Our Own Correspondents.

NORTH-EAST COAST.

The prompt position has again been affected by shortage of boats, which has coincided during the past week with rather a quiet period in the market. The position is therefore somewhat easier at the moment, especially for Durham coals, though the inquiry for forward and the general range of prices are well maintained. Large quantities of coal have been sold over the rest of this year, and business is being steadily booked over next year on the basis of 16s. to 16s. 3d. for good Durham unscreened coals. The present lull is expected to be only temporary, as there is no doubt a genuine demand for all sorts of coal, and it is only a question of tonnage to lift it.

Quotations for gas coals remain firm at 17s. 6d. f.o.b. for Wear Specials, 16s. 9d. to 17s. for best qualities, and 15s. 6d. to 15s. 9d. for seconds. Unscreened coking are 16s. 3d. to 16s. 9d., with smalls at 15s. 9d. to 16s. Bunkers are feeling the tonnage shortage, and best Durham unscreened sorts are rather easier for prompt at 16s. 6d. to 16s. 9d., though well sold forward. Seconds are 15s. 6d. to 15s. 9d. Northumberlands are firmer for choice, and 16s. is asked for best screened steams.

Gas coke remains quietly steady at 21s. 6d. f.o.b. for shipment.

YORKSHIRE AND LANCASHIRE.

The export trade remains quiet, and supplies of most classes of coal are good with the exception of best hards, which are fairly well cleared with quotations of 18s. per ton f.o.b.

Coke making slack continues to be strongly sought to supplement the production at the individual collieries.

Gas coal is in better request. There is less demand for industrial fuel; while furnace coke quotations are unaltered at 22s. to 25s. per ton.

The following are the Humber bunker and export prices, f.o.b. usual shipping ports:

South Yorkshire—Hards, Association, bunkers 18s. 9d. to 19s., export 18s.; screened gas coal, export 18s.; washed trebles, export 18s.; washed doubles, bunkers 18s. 9d., export 17s. 6d.; washed singles, export 16s. 6d.; washed smalls, bunkers 16s. 3d., export 15s. 6d.; rough slack, bunkers 13s. 6d. to 13s. 9d., export 12s. 6d. to 13s.; smithy peas, export 19s. to 19s. 6d.

West Yorkshire—Hartleys (f.o.b. Goole), bunkers 17s. 6d., export 17s. to 17s. 6d.; screened gas coal, export 18s. to 18s. 6d.; washed trebles, export 17s. 6d. to 18s.; washed doubles, export 16s. 9d.; washed singles, export 16s.; washed smalls, bunkers 15s. 3d., export 14s. 6d.; unwashed trebles, export 17s. to 17s. 6d.; unwashed doubles, export 15s. 6d.; rough slack, bunkers 13s. 6d., export 12s.; coking smalls, export 12s.

Derbyshire and Nottinghamshire—Top hards, bunkers 18s. 9d. to 19s. 3d., export 17s. 6d. to 18s. 3d.; cobbles, bunkers 18s. 9d., export 16s. 6d. to 17s. 6d.; washed trebles, export 17s. to 17s. 6d.; washed doubles, export 16s. 6d. to 16s. 9d.; washed singles, export 16s. to 16s. 6d.; washed smalls, bunkers 16s., export 14s. 6d.; unwashed doubles, export 16s. to 16s. 6d.; rough slack, bunkers 14s. 3d. to 14s. 9d., export 12s. 6d.

Yorkshire, Derbyshire, and Nottinghamshire—Screened steam coal, bunkers 17s. to 18s., export 16s. 6d. to 17s.; gas coke, export 21s. to 23s.; furnace coke, export 22s. to 23s.; washed steam, Goole (West Yorkshire), bunkers 17s. 9d.; Hull (West Yorkshire), bunkers 18s.; Hull (South Yorkshire), bunkers 18s., export 17s., per ton.

MIDLANDS.

Trade is extremely flat. The stocking of house coals against the cold season has fallen off. It gave an impetus to trade last month, and again when householders began to return from the August holidays; but apart from special grades, which always command a market, there is very little business passing now.

Those collieries which withdrew their minimum summer prices at the end of July have now cleared off most of the orders carried over into August. There is no urgency in current consumptive demand, consequently some of the managements have more coal on their hands than they know what to do with. They reckon, however, upon a renewal of buying in the near future, as the restriction of output has hitherto kept pithead reserves very low.

Some merchants complain that the limitation of output is being used to prevent buyers getting the advantage of summer prices in those districts where they are still ostensibly in operation. Collieries, however, repudiate the notion of delaying deliveries till the September advance takes effect. They are only too anxious, they say, to get the maximum turnover which the regulations allow.

Each week there are more instances of the advance of prices for particular grades of coal for which there is a specially keen demand. In the case of ordinary lines, however, there is only a very slow inquiry alike for household and industrial coals, and higher prices are consequently very difficult to get. In the retail trade prices have gone up in most parts of the Midland area except for inferior grades.

Sir John Cowan, of Edinburgh, Engineer and Iron and Steel Merchant, Chairman and Managing Director of Redpath Brown and Co., lately Chairman of Beddies, of Bruce Peebles & Co., of James Milne & Sons, and of Morrison & Gibb, and a Director of several other concerns, left personal estate in Great Britain value £35,426.

IF WINTER COMES

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Two-way

Gas Fire Tap.

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Can be fitted with patent Locking device if desired.

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75202 Nottingham.
2412 (Hop) London.

TRADE NOTES.

Change of Address.

On and after Aug. 31 the address of Messrs. Humphreys & Glasgow, Ltd., will be Humglas House, Victoria, London, S.W. 1. Telephone Number, Victoria 3961.

Stanton-Hume Concrete Pipes.

From the Stanton Ironworks Company, Ltd., of Nottingham, we have received the August stock list of their Stanton-Hume concrete pipes. Full specifications of various types and size of pipe are given, which are offered for immediate delivery, subject to being unsold upon receipt of order.

Gas Urns, Water Boilers, Coffee Percolators, &c.

An interesting catalogue has just been published by Ash's Manufacturing Company, of 62-66, Blackfriars Road, S.E. 1, of small gas appliances for canteens, &c. Among the apparatus listed are water boilers, ranging in size from 2 galls. to 15 galls., the "Service" combination counter set, comprising a water boiler in the centre, and two side compartments—one for coffee and the other for milk—tea, coffee, and hot milk urns, and patent steam coffee percolators of various types. Included also are specifications of water boilers and towel urns for use in hairdressers' shops.

OVERSEAS OPPORTUNITIES.

[Extracted from the Board of Trade Journal.]

Spain.

Automatic Weighbridges.—Tenders are invited for three automatic weighbridges of a capacity up to 20,000 kilogrammes, and ten portable weighing machines of a capacity up to 2000 kilogrammes destined for the use of the National Customs Houses. Tenders will be opened on Sept. 6. Firms desirous of offering weighbridges and weighing machines of British manufacture can obtain further particulars of this call for tenders upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W. 1. (Ref. A.X. 8393.)

Egypt.

Cast-iron Spigot and Socket Pipes, Cast-iron Valves and India-rubber Insertion Sheeting.—The Commercial Secretary at Cairo reports that the Public Works Ministry, Tanzim Department, is calling for tenders, to be presented in Cairo by Sept. 21, for the supply of about 10,000 m. of cast-iron spigot and socket pipes: 2000 m. of 6 in. pipe, 5000 m. of 4 in. pipe, and 3000 m. of 3 in. pipe; 1600 m. of 4 in. by 4 m. long; 11 cast-iron valves; and 250 kilos indiarubber insertion sheeting. Firms desirous of offering materials of British manufacture can obtain further particulars of this call for tenders upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W. 1. (Ref. A.X. 8396.)

Venturi Meters.—A report has been received from the office of the Commercial Secretary at Cairo that the Public Works Ministry, Tanzim Department, is calling for tenders, to be presented in Cairo by Sept. 14, for the supply of two venturi meters to register discharge continually in cubic metres. Firms desirous of offering meters of British manufacture can obtain further particulars of this call for tenders upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W. 1. (Ref. A.X. 8408.)

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

London, *Aug.* 26.

The pitch market remains very firm. The price is not below 45s. per ton f.o.b., and in some directions higher figures are mentioned.

Creosote for export is still called 6¾d. per gallon f.o.b.

In white spirits there are no changes to report; pure toluole being 2s. 2d. to 2s. 3d. per gallon and the demand good; 95/160 solvent naphtha is about 1s. 5d.; and pure benzole, 1s. 11d.

Pyridine bases are 3s. 9d. to 4s. per gallon.

Tar Products in the Provinces.

Aug. 26.

Markets for tar products are quite steady, and generally speaking there is rather better tone all round.

Pitch is very firm indeed. Considerable business has been done on the basis of 45s. f.o.b., and at this figure makers are not inclined to do any business for delivery beyond the end of the present year. For January/April they are now quoting 47s. 6d. to 50s. So far as business for the autumn of next year is concerned, there are still inquiries on the market; but makers are refusing to quote.

Creosote. There is no alteration in the market for this article.

Crude carbolic. There is still very keen competition for this article among the various consumers. Crystals carbolic are very firm indeed, particularly for prompt delivery. The demand continues for pure naphthalene.

In water-white products a fair amount of business is being done, particularly for pure.

The average prices of gas-works products during the week were: Gas-works tar, 23s. to 28s. Pitch—East Coast, 45s. f.o.b. West Coast—(f.a.s.) Manchester, 39s. 6d. to 40s.; Liverpool, 43s. to 44s.; Clyde, 43s. to 44s. Toluole, naked, North, 1s. 7¼d. to 1s. 8¼d. Coal-tar crude naphtha, in bulk, North, 9d. to 10d. Solvent naphtha, naked, North, 1s. 3¾d. to 1s. 4¼d. Heavy naphtha, North, 1s. to 1s. 0¾d. Creosote, in bulk, North, liquid and salty, 3¼d. to 3½d.; low gravity, 2d. to 2¼d.; Scotland, 3¼d. to 3¾d. Heavy oils, in bulk, North, 5¾d. to 6d. Carbolic acid, 60's, 2s. 4d. to 2s. 5d. prompt. Naphthalene, £13 to £15. Salts, £5 to £5 10s., bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.c., purely nominal; "B" quality, unsaleable.

Benzole Prices.

The following are considered to be the market prices to-day:

	s. d.	s. d.	
Crude benzole . . .	0 10	to 0 11	per gallon at works
Motor ,, . . .	1 5	,, 1 6	,, ,, ,,
90 p.ct. ,, . . .	1 7	,, 1 8	,, ,, ,,
Pure ,, . . .	1 10	,, 1 11	,, ,, ,,

Bordon and District Gas Company.—This Company have just completed an agreement with the Alton Rural District Council for the supply of twelve public lamps at Whitehill, Bordon, commencing on Oct. 1 next for a term of three years.

Gas Company Obtains Matlock Public Lighting Contract.—Tenders from the Derbyshire and Notts. Electric Power Company and the Matlock and District Gas Company to deal with street lighting in the Matlock ward were considered by the Matlocks Council at a special meeting on Aug. 20. The Gas Company offered to light, extinguish, and maintain the 256 lamps concerned at a cost of £614 18s. 1d. for the ensuing eight months. The Electric Power Company required £605 for the conversion of 121 lamps, apart from lighting costs. The Council decided to accept the tender of the Gas Company. Hitherto the lamps have been lit, extinguished, and maintained by the Council, who have paid separately for the gas used.

Aldershot Company's Progressive Policy.—The Aldershot Gas, Water, and District Lighting Company are pursuing a very vigorous policy, and during the autumn anticipate opening gas and electricity showrooms in their western area at Fleet, Hants. These showrooms will be of an exceptional character, architecturally and otherwise. Moreover, they will be in a bold position in the main road, thus adding to the attractiveness of the rapidly growing place of Fleet and the surrounding districts. A further showroom will be opened in the well-known beauty spot of Hindhead, devoted entirely to electricity, and later on another showroom, architecturally on Old English lines, will be opened at the corner of East Street and High Street in the heart of Haslemere. It is anticipated that further showrooms will be opened, as the area of the Company has substantially increased in recent years to such an extent that when the Special Orders now emerging from the Commissioners have been confirmed, the statutory limits of electricity supply will represent some 112 places with 413·67 square miles of territory.

Woking District Gas Company.—The Directors of the Woking District Gas Company, in their report for the half-year ended June 30, state that, in comparison with the half-year ended June 30, 1928, the quantity of gas sold shows an increase of 10,018,398 c.ft., or 12·04 p.ct., and receipts from sale of residual products show an increase of £328. The net gain in consumers during the half-year number 108, and 351 cookers, gas fires, &c., have been fitted. The profit on the half-year's working, after charging interest on debenture capital and temporary loans and income-tax, amounts to £6347, which, with £4859 brought from the previous half-year, makes a disposable balance of £11,206. It is recommended that dividends at the following rates be paid (*less* income-tax) on the preference and ordinary stocks, which will absorb £3088, and that £1000 be transferred to reserve fund, leaving £7118 to be carried forward to the next account: On the "A" ordinary stock, 10 p.ct. per annum; on the "B" ordinary stock, 7 p.ct. per annum; on the "C" preference stock, 5 p.ct. per annum; and on the 8 p.ct. redeemable preference stock, 8 p.ct. per annum.

The Bakewell Urban Council have approved of a scheme of the Gas Committee to fix gas cookers free up to a distance of 20 ft. of service pipe.

The Seascale Gas Company, who announced their intention to close down, have sold the gas-works to a local syndicate, who will take possession and carry on the works from Aug. 31.

A series of successful, well-attended cookery demonstrations by gas were held during a recent week in the Town Hall, Wells. The lectures were conducted by Miss E. Holden, of Radiation, Ltd., whose services were much appreciated. The lectures were opened by His Worship the Mayor, Mr. J. C. Davis, J.P., supported by the Chairman of the Company, Mr. W. J. Hippisley, and others.

In view of the refusal of the Commercial Gas Company, owing to more stringent rules coming into force, to approve the arrangements originally proposed for heating the first bedroom in each tenement in Birchfield House, Poplar, the London County Council have arranged for a test to be made to determine the efficiency of a suggested type of terminals for fixing on to the ends of the gas fire flues, in order that, if the results of the test are satisfactory, arrangements may be made for meeting the Gas Company's objections.

A visit of technical and practical interest to a representative party of farmers and business men was arranged recently by Mr. K. A. C. Fitzgerald, agricultural adviser for the West Midland area of Imperial Chemical Industries, Ltd. The object was that they might witness the production of artificial nitrogenous manures and the results to be achieved by their application on grass land. The visits were to the Corporation gas-works of the City of Stoke-on-Trent and the Shelton Iron, Steel, & Co.'s works of the British Sulphate of Ammonia Federation, where the artificial manure is produced. The itinerary also included a visit to the Knighton Mount Farm, Adbaston.

STOCK AND SHARE LIST.

[For Stock Market Report, see earlier pages.]

Issue.	Shares.	When ex-Dividend.	Dividends, Prev. Hf.Yr	Dividends, Last Hf. Yr.	NAME.	Quotations. Aug. 23.	Rise or Fall on Week.	Transactions Lowest and Highest Prices.
£			% p.a	% p.a.				
171,978	Stk.	Aug. 15	5	5	Aldershot 5 p.c. max. C.	70—75*	..	..
412,992	,,	,,	4	4	Do. 4 p.c. Pref.	73—76*	..	..
1,851,868	,,	Apl. 11	7½	7½	Alliance & Dublin Ord.	96—99	..	95—97
374,000	,,	July 11	4	4	Do. 4 p.c. Deb.	62—65	..	..
522,655	,,	Mar. 7	7	7	Barnet Ord. 7 p.c.	114—118	..	..
800,000	1	May 9	1/4½	1/4½	Bombay, Ltd.	18/6—20/6	..	..
172,500	10	Mar. 7	8½	9	Bournemouth 5 p.c.	13—13½	..	..
500,000	10	,,	7	7	Do. B 7 p.c.	12½—12¾	..	12½—12¾
439,160	10	,,	6	6	Do. Pref. 6 p.c.	10½—11½	..	..
50,000	Stk.	July 11	3	3	Do. 3 p.c. Deb.	54—57	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb.	72—75	..	73
357,900	,,	Mar. 21	7½	7½	Brighton & Hove 6 p.c. Con.	113—116	..	..
371,880	,,	,,	6½	6½	Do. 5 p.c. Con.	100—103	..	..
1,287,500	,,	July 25	5	5	Bristol 5 p.c. max.	88—89a	..	..
355,000	,,	Apl. 11	8	7½	British Ord.	117—120	..	119½
100,000	,,	June 27	7	7	Do. 7 p.c. Pref.	112—117	..	..
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	71—74	..	..
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb.	94—97	..	96½
100,000	10	May 30	6	8	Cape Town, Ltd.	9—10	..	..
100,000	10	Apl. 24	4½	4½	Do. 4½ p.c. Pref.	6½—7½	..	..
150,000	Stk.	June 27	4½	4½	Do. 4½ p.c. Deb.	71—76	..	..
626,860	,,	July 25	8	8	Cardiff Con. Ord.	95—98	..	..
187,860	,,	June 27	7½	7½	Do. 7½ p.c. Red. Deb.	99—102	..	..
187,150	,,	Aug. 15	6½	5	Chester 5 p.c. Ord.	86—91b*	..	..
98,936	1	May 9	12/-	12/-	Colombo Ltd. Ord.	35/—37/-	..	..
24,495	1	,,	1/4½	1/4½	Do. 7 p.c. Pref.	20/—22/-	..	..
875,402	1	Apl. 11	1/9½	1/9½	Colonial Gas Assn. Ld. Ord.	24/6—26/6	..	..
187,848	1	,,	1/7½	1/7½	Do. 6 p.c. Pref.	20/6—22,6	..	..
2,073,280	Stk.	July 25	7	5	Commercial Ord.	93—96	..	94½—95½
475,000	,,	June 13	8	8	Do. 8 p.c. Deb.	56—59	..	..
787,560	,,	Aug. 15	7	7	Croydon sliding scale	108—111*	..	109—109½
402,100	,,	,,	5	5	Do. max. div.	81—84*	..	82
542,270	,,	Mar. 7	7	10	Derby Con.	112—117e	..	..
55,000	,,	June 27	4	4	Do. Deb.	68—71e	..	..
200,000	,,	Mar. 7	5	5	East Hull Ord. 5 p.c.	73—75	..	..
1,002,180	10	Mar. 21	†4	†7	European, Ltd.	15—17	..	15½—£16/1/-
19,704,480	Stk.	July 25	5½	5½	Gas Light & Coke 4 p.c. Ord.	18/3—18/9/	—/3	18/4½—18/9
2,600,000	,,	,,	8½	8½	Do. 8½ p.c. max.	61—63	..	61½—62½
4,187,020	,,	,,	4	4	Do. 4 p.c. Con. Pref.	73—75	..	73½—74½
5,601,630	,,	June 13	5	5	Do. 5 p.c. Con. Deb.	56½—59½	..	57½
5,643,770	,,	,,	5	5	Do. 5 p.c. Red. Deb.	97—100	..	99½—99½
83,500	,,	Mar. 21	7	7	Hastings & St L. 5 p.c. Conv	98—103	..	..
258,740	,,	,,	5½	5½	Do. 5½ p.c. Conv.	80—85	..	..
70,000	10	Apl. 24	†10	†10	Hongkong & China, Ltd.	14—15	..	..
218,300	Stk.	Mar. 7	5½	6	Hornsey Con. 5½ p.c.	86—89	..	..
1,976,000	,,	May 30	10	20	Imperial Continental Cap.	380—400	+5	384—399
228,180	,,	Aug. 15	8½	8½	Do. 8½ p.c. Red. Deb.	69—72*	..	..
235,242	,,	Aug. 15	7½	8	Lea Bridge 5 p.c. Ord.	115—118*	..	..
2,145,907	,,	Aug. 15	6½	6	Liverpool 5 p.c. Ord.	93—94b*	..	..
600,000	,,	Mar 21	7	7	Do. 7 p.c. Red. Pref.	102—104b	..	..
146,786	,,	Feb. 21	9	8	Maidstone 5 p.c. Cap.	124—129	..	..
63,480	,,	June 27	3	3	Do. 3 p.c. Deb.	53—56	..	..
15,000	5	June 13	†8	†10	Malta & Mediterranean	8½—6	..	..
392,000	—	Apl. 2	—	5½	Metrop'l'n (of Melbourne) 5½ p.c. Red. Deb.	100—102	..	..
841,920	Stk.	May 30	15	†9	Montevideo, Ltd.	105—108	..	..
2,051,818	,,	July 25	5	5½	Newcastle & Gateshead Con.	16/9—17/3d/	..	..
682,856	,,	,,	4	4	Do. 4 p.c. Pref.	70½—71½d	..	..
691,705	,,	June 27	8½	8½	Do. 8½ p.c. Deb.	68—69d	..	..
181,780	,,	Mar. 7	7/1/0	7/1/0	North Middlesex 6 p.c. Con.	105—110	..	..
800,000	,,	Apl. 24	9	7	Oriental, Ltd.	115—120	..	—
205,162	,,	June 27	8	8	Plym'th & Ston'house 5 p.c.	110—113	..	..
424,416	,,	Feb. 21	7½	8½	Portsm'th Con. Stk. 4p.c. Std.	113—118	..	..
241,446	,,	,,	5	5	Do. 5 p.c. max.	82—85	..	..
2,334,464	1	June 27	—	‡5	Primitiva Ord.	35/—37/-	+1/-	34/—36/-
244,500	100	June 8	4	4	Do. 4 p.c. Red. Deb.	92—95	..	..
695,000	Stk.	July 25	4	4	Do. 4 p.c. Red. Deb. 1911	79—82	..	..
416,845	,,	June 27	4	4	Do. 4 p.c. Cons. Deb.	79—82	..	81½—82
150,000	10	Mar. 21	6	6	San Paulo 6 p.c. Pref.	8½—9	..	..
1,786,968	Stk.	Mar. 21	6½	6½	Sheffield Cons.	108—110a	..	..
95,000	,,	Jan. 10	4	4	Do. 4 p.c. Deb.	74—77a	..	..
90,000	10	June 13	‡4	‡4	South African	4—6	..	..
6,609,895	Stk.	July 26	7½	5	South Met. Ord.	101—103	..	101—102½
500,000	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	106—107	..	..
1,895,445	,,	July 11	8	8	Do. 8 p.c. Deb.	57—60	..	58½
784,000	,,	Mar. 7	6½	6½	Do. 6½ p.c. Red. Db.	100—102	..	..
91,500	,,	Aug. 15	8½	8½	South Shields Con.	103—104d*	..	..
1,543,795	,,	July 25	6½	8½	South Suburban Ord. 5 p.c.	103—106	..	105
468,837	,,	June 27	5	5	Do. 5 p.c. Deb.	95—98	..	..
547,740	,,	Aug. 15	5	5	South'mpton Ord. 5 p.c. max.	75—78*	..	..
121,275	,,	June 27	4	4	Do. 4 p.c. Deb.	70—73	..	..
179,014	,,	July 25	8	8	Sutton Ord.	115—118	..	..
250,000	,,	Feb. 21	7	7	Swansea 7 p.c. Red. Pref.	100—102	..	..
200,000	,,	June 27	6½	6½	Do. 6½ p.c. Red. Deb.	100—102	..	..
1,002,275	,,	Aug. 15	6⅝	6⅝	Tottenham District Ord.	105—108*	..	..
150,000	,,	,,	5½	5½	Do. 5½ p.c. Pref.	97—100*	..	..
181,155	,,	June 13	4	4	Do. 4 p.c. Deb.	74—77	..	75½
289,094	,,	Mar. 7	8½	7	Uxbridge, Maidenhead, & Wycombe 5 p.c.	93—98	..	..
88,880	,,	,,	5	5	Do. 5 p.c. pref.	88—93	..	..
80,000	,,	July 11	9	9	Wandsworth, Wimbledon, and Epsom— Wandsworth A 5 p.c.	144—147	..	..
355,636	,,	,,	7½	7½	Do. B 5½ p.c.	122—127	..	..
432,525	,,	,,	6⅜	6⅜	Do. C and New	100—105	..	..
852,000	,,	,,	7⅛	7⅛	Do. Wimbledon 5 p.c.	112—117	..	..
98,000	,,	,,	7⅛	7⅛	Do. Epsom 5 p.c.	123—128	..	..
200,000	,,	,,	5	5	Do. 5 p.c. Pref	87—92	..	..
88,416	,,	June 27	8	8	Do. 8 p.c. Deb.	54—57	..	..
224,748	,,	,,	4	4	Do. 4 p.c. Deb.	74—77	..	..
347,500	,,	,,	5	5	Do. 5 p.c. Deb.	93—96	..	..

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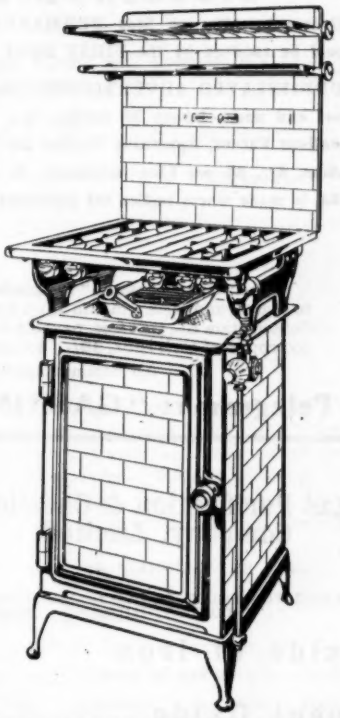

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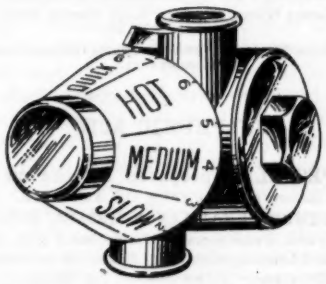

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